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PUBLIC HEALTH LABORATORIES*

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THE APPLICATION of laboratory methods to public health practice during the last half of the nineteenth century paved the way for an important development of public health laboratory service throughout the United States. Of the 100 cities surveyed in 1923, all had the benefit of laboratory service, although the means of provision and the plan of organization varied considerably.

GENERAL ORGANIZATION

Four cities[1] had no municipal laboratory, but depended entirely upon state or county laboratories, while in seven others,[2] the work was handled in local laboratories on a contract basis. In each of the remaining 89 cities, special quarters were provided in public buildings, usually (52) in the city hall.

Seventy-five cities maintain a laboratory for the examination of diagnostic as well as other types of specimens, both chemical and bacteriological; but in 9 of them[3] the work is limited and many of the examinations are apparently carried on by state laboratories. Two laboratories[4] serve both city and county, while three others[5] perform examinations for the city and state combined. Nine cities[6] have a bacteriological laboratory and a separate chemical laboratory which is usually under the bureau of food and drugs. In these cities the work of the two laboratories is usually separated, as are the finances and personnel, but whenever available the combined figures have been used in this study.

ESTABLISHMENT

The laboratory movement has been a somewhat gradual one, as shown by the dates of establishment of 74 of the 89 municipal laboratories functioning in 1923. According to information furnished the surveyors, 9 were established prior to 1895[7]; 13 between 1895 and 1900; 13 between 1900 and 1905; 9 between 1905 and 1910; 9 between 1910 and 1915; 12 between 1915 and 1920; and 9 between 1920 and 1925. From 1 to 4 laboratories were established in each of the years during the period with the exception of 1911 and 1922 when there were none, and 1904 when there were 5. The laboratories at Ft. Worth, Tulsa and

*A chapter from the Report of the Committee on Municipal Health Department Practice of the U. S. Public Health Service surveys of 100 large cities.

1. Bayonne (uses Jersey City laboratory), Duluth (state laboratory in city), Paterson and Wilkes-Barre.

2. Albany, El Paso, Evansville, Richmond (contract with state), Schenectady (contract with Ellis Hospital), South Bend and Utica (contract with State Hospital).

3. Cambridge, Fall River, Jacksonville, Lawrence, New Bedford, Somerville, Springfield, Trenton and Wilmington.

4. Birmingham and Camden.

5. New Orleans, Memphis (city and West Tennessee) and Providence.

6. Baltimore, Cleveland, Harrisburg, Indianapolis, Jersey City (county bacteriological), Kansas City, Missouri, New York, Philadelphia, and St. Louis.

7. Buffalo, Chicago, Denver, Hartford, New York, Providence, Rochester, St. Louis (largely chemical), and Tacoma.

Wilmington were established during the year of the survey. It should also be noted that Paterson has established a well-equipped laboratory since that time. While there is still considerable variation in the scope and volume of work performed, and a striking lack of standardization in the keeping of records, it is fair to state that laboratory service in the surveyed cities is generally well developed.

PERSONNEL

Bureau Director. Forty-three of the 89 laboratories directly connected with the health department (including those doing county and state work as well) have full-time directors, while 33 employ directors on a part-time basis. In 13 cities the health officers supervise the work at first hand, in 4 cases having only part-time assistants. It should also be mentioned that in 6 cities the full-time directors, so-called, have no assistants, while in 7 others the part-time directors are the only laboratory employes.

The replies to the questionnaire concerning qualifications were not particularly enlightening. In Cleveland where the position of director is under Civil Service, a degree of M.D., Ph.D., or D.P.H., or equivalent training, is required. In San Francisco, a graduate physician with special training in bacteriology is required. In 15 cities directors have had from 10 to 32 years experience in public health laboratory work. It was stated that 11 of the full-time directors and 16 of the part-time directors are graduates in medicine, 1 of the former group also having a Doctor of Public Health degree. One full-time director holds a degree of Doctor of Public Health without a medical degree, 1 a Ph.D., and another a degree of Doctor of Veterinary Medicine. The latter director (St. Joseph) assists in the supervision of food and dairy inspection as a full-time employe of the health department, as in the case of Jacksonville, Oklahoma City and Tulsa. In addition to their public health laboratory duties, 10 directors are engaged in other types of laboratory work, usually in hospitals, while at least 4 are university instructors. Three (2 part-time) are engaged in communicable disease work, and a fourth (Savannah) is assistant health officer. Four part-time directors spend the remainder of their time in the practice of medicine, 1 of them being a pediatrician. The detailed situation concerning full or part-time service, and salaries of full-time directors is set forth in the table given below.

From Table I it may be seen that the salaries of laboratory directors vary, as we might expect, with size of city, the average salary of 43 full-time directors amounting to approximately $3,000. This also happens to be the median salary, and was paid the directors in San Francisco, Minneapolis, Akron, New Haven, Norfolk, and Oklahoma City in 1923. The maximum salary was paid in New York where so much pioneer work was done, and the minimum in Flint, Tacoma and Fort Wayne, where the directors were the only laboratory employes. It is interesting to note in this connection that in 40 cities in 1920 the salaries of full-time chiefs of laboratory service ranged from $1,500 to $6,500, with a median of $2,700. The average salaries for the groups of cities studied in that year, cor-

TABLE I

CHARACTER OF SERVICE AND SALARIES OF LABORATORY DIRECTORS. 89 CITIES 1923

Cities of Population	No. Cities with Director			Salaries of Full-time Director			
	Full time	Part time	Health officer	Mean	Median	Minimum	Maximum
Over 500,000	9	3	0	$3992	$3600	$3000	$6500
250,000 to 500,000	8	6	2	3234	2800	2340	5750
100,000 to 250,000	20	20	5	2658	2700	1800	4000
70,000 to 100,000	6	4	6	2430	2200	1800	4000
All cities	43	33	13	3007	3000	1800	6500

responding to the first three groups above were: $4,016, $2,665, and $2,496. The salaries of part-time directors in 1923 ranged from $900 to $3,600, with an average of $1,967, and a median of $1,800.

Other personnel. Unfortunately the information secured concerning personnel other than the directors is inadequate for satisfactory classification purposes, as only the total number rather than the types of laboratory workers is given in many cases. These data naturally show considerable variation, both with respect to size of city, and among cities of approximately the same size but with diverse problems. In New York City where the scope of work is extensive, including research and preparation of biological products, 23 bacteriologists, 62 assistants, and 82 laboratory helpers are employed. In several cities of less than 250,000 population,[8] on the other hand, 1 or 2 part-time laboratory workers perform all the examinations, both bacteriological and chemical. It is usually found that part-time service is somewhat expensive for the amount and type of work performed.

Five cities of group I have from 15 to 46 workers in addition to the director, while the remaining 6 cities, exclusive of New York, have from 8 to 13. Five cities of group II have from 5 to 9 workers, while 8 have from 1 to 4. Four cities of group III have from 5 to 8 workers, while 23 others have from 1 to 4, besides 6 with part-time assistants and 8 with none. Five cities of group IV employ from 1 to 3 full-time workers, while 5 others have 1 or 2 part-time assistants, and 5 have none. For the remaining 8 cities having local laboratories, exclusive of the contract laboratories, information on this subject is incomplete or entirely lacking. It should be mentioned in passing that the total personnel given in many cases apparently includes clerical as well as technical employes. The most frequent need mentioned by health officers in connection with the laboratory situation in different cities is for an adequate staff of trained personnel.

In formulating an opinion on the necessary technical staff for public health laboratories as shown by practical experience, further classification is obviously desirable.

Information as to types of full-time laboratory personnel is fairly complete for 17 cities, 3 of group I, 6 each of groups II and III, and 2 of group IV. These data show that 1 bacteriologist is employed per 193,000 population, 1 technician or assistant per 128,000 population, and 1 laboratory helper (exclusive of stenographers) for approximately 120,000 population. In 4 of these cities a relatively large number of chemical examinations are also performed, either in a separate laboratory or in a joint chemical and bacteriological laboratory. An average of 1 chemist per 264,000 population is employed in these 4 cities which are the only ones of the 17 thus showing a special classification for chemists. In these 4 cities it may be noted that an average of 1 bacteriologist per 205,000 people is employed.

As these laboratories are staffed by full-time employes, and as their general scope of work is fairly comparable, it is instructive to note that an average of 3,187 total examinations per laboratory worker were performed during the year 1923. These numbers varied from 1,818 in a laboratory where extensive research is carried on, to 14,165 where relatively little research is undertaken, the median being 4,631. The volume of work performed will be discussed later, but it is noteworthy in this connection to observe that the service rendered by 12 of these 17 laboratories organized on a full-time basis is more extensive than the average, as indicated by the total examinations per 1,000 population, the average for the selected cities being 98.9 (70.6 diagnostic) as compared with 78.5 for the surveyed cities as a whole.

8. Erie, Lawrence, Lowell, Manchester, New Bedford, San Diego and Springfield among others.

CHARACTER OF SERVICE

In general it may be stated that the effectiveness of laboratory work in a community may best be determined by a study of the scope and volume of work performed.[9] These factors vary considerably in different cities, and obviously depend upon local conditions. For example, the presence of a well organized state, hospital or private laboratory will often tend to limit the scope of work which would otherwise be performed in a city public health laboratory. It has been previously stated that 4 city health departments did not establish a laboratory until 1923 or 1924. As nearly as can be ascertained the following enumeration represents the scope of work performed in the other 96 cities. Bacteriological examinations of water were made in 71 cities, chemical in only 30; bacteriological examinations of milk were made in 84 cities, chemical in 66; examinations of food (including ice cream and in a few cases shellfish) were made in 28 laboratories; of drugs in 20; of beverages for alcoholic content in 14; of urine in 60. Examinations for diphtheria were made in 94 cities (virulence tests in 15); tuberculosis in 93 (complement fixation in 3); gonorrhea in 82 (complement fixation in 6); typhoid in 81; syphilis in 61 (dark field in 20); malaria in 43; rabies in 42; meningitis in 8; and plague in 4. The Widal method for typhoid is used in routine, but 41 laboratories also made blood cultures, or examinations of stools or urine, either one or all. The practice of requiring negative specimens of stools and urine before the release of typhoid patients has apparently become more common since the 1920 survey.

In addition to the examinations ordinarily made, pathological tissues were examined in 18 city laboratories; pneumococcus typing was done in at least 15; blood counts were made in 8; mothers' milk was examined in 5; swimming pool water in 4; and sewage in 2.

In order to gain a more complete picture of the relative emphasis given to different types of work, the data for 25 cities having a well-rounded service were further classified, with the following results: Of the total examinations made, those for diphtheria amount to 43 per cent on the average, for syphilis 16 per cent, for gonorrhea 9 per cent, for tuberculosis 6 per cent, for typhoid 2 per cent, while milk examinations number 15 per cent, and water examinations 2 per cent, of the total, leaving 7 per cent as miscellaneous specimens.

As in 1920, it should be noted that a very few of the largest city laboratories, notably New York, manufacture biological products for diagnosis, prevention and treatment of diseases. Practically all the other laboratories serve as distributing agents for such supplies (at least diphtheria antitoxin and smallpox vaccine) obtained from state laboratories, from the New York City laboratory, or by direct purchase from commercial concerns. It is stated that in 21 laboratories, vaccines are prepared, but in all but 7 this is only upon special request for autogenous vaccines.

RESEARCH WORK

Research work is carried on in 21 of the 89 municipal laboratories (exclusive of contract laboratories). The character of this work varies widely with the different cities, as shown by the following broad classification of some of the most important investigations under way in 1923.

1. *Diphtheria.* Special studies of diphtheria carriers, and of technique used in diphtheria examinations were made in Baltimore, Toledo and New Haven; Schick test and immunization studies were continued in New York and Denver.

2. *Scarlet fever.* Studies in the etiology of scarlet fever were carried on in New York, Detroit and Columbus.

3. *Tuberculosis.* The complement fixation test was further studied in Boston.

9. The administrative features and scope of work of the public health laboratories in Birmingham, Ala., and in Bridgeport, Conn., have been described in an instructive manner in the *A. J. P. H.*, March, 1924, and *The Nation's Health*, December 15, 1923, respectively.

Other tuberculosis studies were reported from the New York, Chicago, Los Angeles, Milwaukee and St. Paul laboratories.

4. *Typhoid.* Methods for laboratory diagnosis of typhoid fever received consideration in Los Angeles, Richmond and St. Paul.

5. *Milk.* Research studies of a wide variety were pursued in Baltimore, Chicago, Cleveland, Detroit and New Haven.

6. *Miscellaneous.* In addition to the above mentioned types of investigations, many other problems have been studied. These include work on food poisoning in Milwaukee, New York and Washington; Brills' disease, in Savannah; protozoölogy problems, among others, in Buffalo; trade wastes in Cleveland; antirabic vaccination in Newark; and vitamins in Spokane. Jersey City, Providence and Rochester were also included in the list of cities in which research problems were said to be under way during this year. In addition, New York conducted research on pneumonia sera, measles serum, anthrax, the use of brilliant green dye in the sterilization of vaccine, rat fleas, a classification of the paratyphoid group of organisms, and a study of the Wassermann test.

It is somewhat disconcerting to find that only 21 of the cities of this study reported through the surveyors that special investigations were being undertaken in the public health laboratories, when of the smaller group of 83 cities in 1920, 27 reported that definite research work was being pursued. Whether or not the year 1923 was a period of lag, it is impossible to ascertain, but this seems unlikely. Surely, since that time many important studies have been reported from different cities included in this survey. Reports from several cities suggested that the value of special investigations was realized but that staff and funds were entirely inadequate for any but routine observations. This is added proof of the need for education in developing sympathetic public opinion. It seems well to emphasize repeatedly that a laboratory, if adequately staffed and equipped, is in a position to render important service to its community, as well as to the country as a whole, through its research studies of practical problems.

GENERAL PROCEDURE AND EQUIPMENT

In all cases, as in 1920, it is reported that examinations for city health work are made free. A few of the laboratories perform examinations for persons outside the city, for which they receive fees. The equipment of the laboratories, including contract laboratories, was listed as adequate or sufficient for the present needs in 65 cases, fair in 12 cases, and limited or inadequate in 7 cases. Information on this question is lacking concerning the other laboratories. Several laboratories are now supplied with the leading public health and medical journals and also give members of their staff an opportunity to attend conventions and visit other laboratories where new methods are being developed.

The majority of laboratories are centrally located in quarters ample for existing needs, although several have no room for expansion and a few are very crowded. The number of square feet of space allotted to the laboratories of cities of 500,000 and over ranged from 1,013 in Los Angeles, and 2,900 in Boston, to 56,232 in New York. In cities of 250,000 to 500,000, 850 square feet (Portland) to 7,200 (Newark) were utilized for this purpose. In cities of less than 250,000 population the majority of cities provided from 500 to 1,500 square feet for this work.

The larger cities and many of the smaller ones maintain culture stations, chiefly for the convenience of physicians who desire to leave specimens late in the day, and as distributing centers for fresh media and outfits. In the larger cities they are also useful for physicians in districts far removed from the laboratory. Collections are generally made once a day, either by members of the laboratory force or by sanitary inspectors. It is noteworthy

that the attitude of local physicians toward the laboratory is reported by the health officers as "favorable," "friendly," or "coöperative," in practically every city of this study. This fact is frequently borne out in the analysis of the volume of work performed by the various laboratories. Nearly one-third of the laboratories report efforts to increase the use of this service in the city, through the distribution of circulars or other publicity and special talks to medical men, as well as by prompt and efficient service. At least 4 others indicate that facilities are already taxed by the volume of work performed. The remaining laboratories are evidently satisfied with the present situation.

Records of examinations are quite generally maintained, usually on file, in the laboratory. Four cities suggest particularly the use of a day book, and 6 others the use of a card index. It is apparent from the classification of types and numbers of examinations made that there is need for a definition of what constitutes a laboratory "examination" and a laboratory "specimen," followed by some stimulus for uniform bookkeeping in the different laboratories.

VOLUME OF WORK

Health officials now recognize the laboratory as the foundation of effective health work and as a means for coördinating their activities. Around public health laboratories centers much of the practice of modern medicine. While there are many limitations to the use of "number of examinations per 1,000 population," this calculation is of some value in measuring the volume of work performed. It is interesting to note in the following Table II that data for 78 cities show that 78 examinations were performed per 1,000 population; 60 of these, or 77 per cent, were examinations of a diagnostic character. This free service tends to make friends for the health department among physicians and the public.

The data for 64 cities of 100,000 population and over in 1920 showed that 85 examinations were performed per 1,000 population; 63 of these, or 74 per cent, were of a diagnostic character.

According to the 1923 figures, 25 cities report less than 50 examinations (of all kinds) per 1,000 population; 32 cities from 50 to 100; 15 cities from 100 to 150; and 6 cities above 150.

In seeking other means of measuring the effectiveness of laboratory service for the cities of 100,000 population and over, there were secured the cases of diphtheria and of typhoid fever reported in 1923 for comparison with the diagnostic laboratory examinations made. In 58 of the cities of this study, an average of 19 laboratory examinations of diphtheria cultures were made for every case reported. For 52 cities it is also interesting to find that an average of 7.3 typhoid examinations (Widal and culture combined) were made for each case reported during the year. It is customary to consider a positive finding of diphtheria, or typhoid, in a specimen for diagnosis as a positive case report, since the physician frequently awaits the laboratory report before making his final diagnosis.

TABLE II

NUMBER AND COST OF PUBLIC HEALTH LABORATORY EXAMINATIONS, 1923

Cities of Population	No. cities	Number of Examinations: Per 1000 population: Total	Per 1000 population: Diagnostic	Per case reported: Diph.	Per case reported: Typh.	Cost: Per capita	Cost: Per exam.
Over 500,000	11	77	59	17.9	6.8	$.04	$.59
250,000 to 500,000	12	90	70	26.9	12.0	.03	.36
100,000 to 250,000	37	78	52	16.7*	4.8**	.03	.41
70,000 to 100,000	18	69	46	...	...	.04	.59
All cities	78	78	60	19.0	7.3	.04	.51

* 29 cities.
** 35 cities.

COST OF LABORATORY OPERATIONS

The cost of these laboratory operations for the 78 cities was 4 cents per capita; the average for 11 cities of group I was 4 cents; for the 12 cities of group II 3 cents; for 37 cities of group III 3 cents; and for 18 cities of group IV 4 cents. This agrees with the average per capita cost reported for 43 cities in 1920.

In computing the cost per specimen, it should be remembered that some types of examinations are more expensive than others. In 11 of the cities of group I, 8 of whom carry on research, the cost per examination was 59 cents; in 12 cities of group II the cost was 36 cents; in 37 cities of group III the cost was 41 cents, and in 18 cities of group IV the cost was 59 cents. The average cost per examination was 51 cents, as compared with 40 cents reported for 43 cities in 1920. It has obviously been found impossible to consider research costs in these determinations because of lack of precise data.

SUMMARY AND CONCLUSIONS

1. Public health laboratory service is well developed in the majority of the 100 largest cities of the United States. At the time of the survey, 4 cities were dependent upon the state for free diagnostic service. Since that time, one of these has established its own laboratory.

2. The scope of laboratory operations is apparently more uniform than the methods of record keeping. This situation is doubtless the result of lack of definition of what constitutes a laboratory examination. It might be well to consider the desirability of recording both the number of specimens received and the number of examinations of each kind performed.

3. The importance of research is generally recognized by laboratory directors, but in nearly 80 per cent of the laboratories special studies of this character cannot be undertaken because of lack of adequate funds and a sufficient corps of trained workers.

4. In an outline of the personnel needed to carry out a comprehensive laboratory program in a city of 100,000 population, it was suggested in the previous report of the Committee on Municipal Health Department Practice, in 1923, that a staff of one bacteriologist, a chemical assistant, a helper, and a clerk is necessary. A fairly detailed analysis of the personnel and scope of work of a selected group of laboratories previously mentioned indicates that this is a reasonable and desirable organization, both as to type and number of laboratory workers.

5. The average number of examinations performed in 78 cities was 78 per 1,000 population, 77 per cent being of a diagnostic character. A study of the work of several first-class laboratories indicates, however, that from 100 to 125 examinations per 1,000 population may be expected from such a laboratory, organized on a full-time basis, except in a few cases where extensive research problems are under investigation.

6. The cost of laboratory examinations exclusive of research varies considerably, but averages 51 cents. The cost per capita for laboratory services ranges from less than 1 cent to 13 cents, but averages 4 cents. Under present conditions, from 4 to 9 cents per capita are needed in most cities for the maintenance of a first-class public health laboratory, providing for research as well as for a wide range of bacteriological and chemical examinations.

7. The attitude of local physicians toward the laboratory is reported as favorable or coöperative in most cases. Prompt and efficient service is frequently given by directors as the chief method of securing a fuller use of laboratory service.

SUN WORSHIPPING IN PENNSYLVANIA

J. CLARENCE FUNK

Pennsylvania State Department of Health, Harrisburg, Pa.

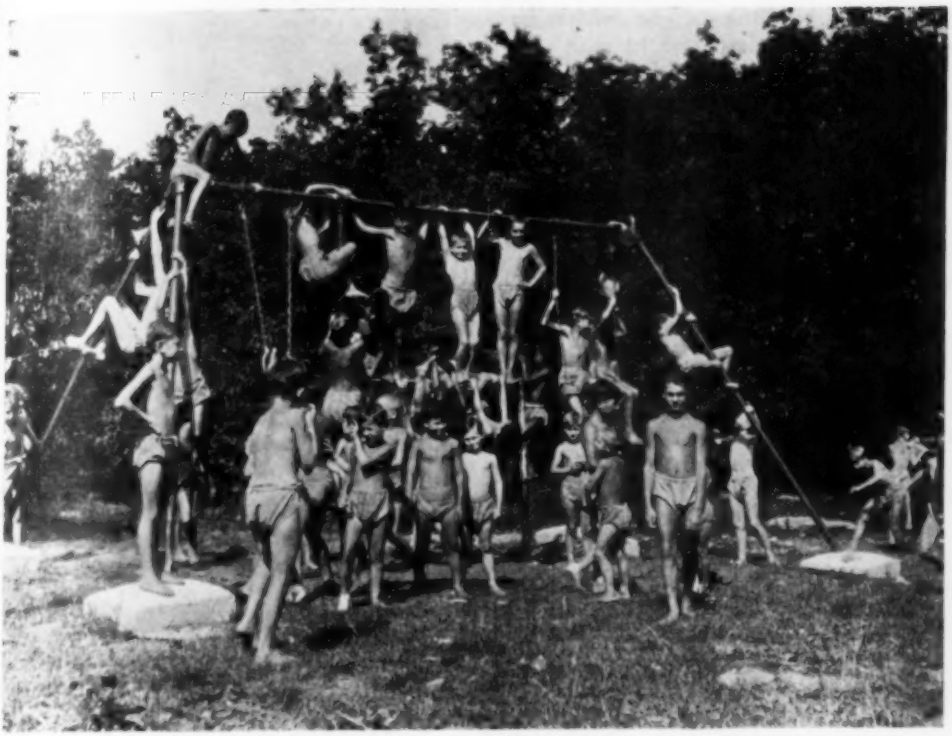
THE PENNSYLVANIA State Department of Health for the past five years has been engaged in an unusual experiment in human conservation.

Situated respectively on the tops of the Blue Ridge and the Alleghenies are two state sanatoria for the treatment of tuberculosis. While these have actively functioned for many years, being the largest institutions of their kind in the United States, it has only been within the last half decade that the modern application of heliotherapy to hundreds of children has been accomplished.

Inspired by the remarkable results of Rollier, in Leysin, Switzerland, Dr. William G. Turnbull, now Deputy Secretary of Health, but in 1919 Medical Director of the Cresson Sanatorium, at that time first introduced the sun-bath treatment. Ever since, Pennsylvania has been unostentatiously proceeding with this therapy. In all, approximately two thousand children have been its direct beneficiaries.

While the climatic conditions (so unlike those of the High Alps) do not admit of an all-year application of the direct sun-bath, the method, however, is con-

[764]



tinued upon those requiring it, through the use of the ultra-violet lamp—a fairly effective substitute.

The patients are referred to the sanatoria from the various state clinics and include children predisposed to tuberculosis infection as well as those who have latent, pulmonary or surgical tuberculosis. The surgical tuberculosis cases, however, must have a pulmonary complication to gain admittance.

The hospitals themselves, while housing two thousand patients, have an aggregate capacity for children only of four hundred and twenty-five. However, in the spring, summer and early fall, a period covering twelve weeks, the children's population is augmented by several hundred through the use of pavilions unadapted to winter weather. These so-called summer camps are two in number of six weeks duration; at the end of which, any child still needing hospitalization or special treatment is transferred

to the main buildings. The others, having attained normal weight and being in other respects equally improved, are returned to their homes where again they come under the careful supervision of the local clinical and nursing services.

Upon entrance, the patient is first stripped only up to the knees and the sun's rays allowed to be effective for a fifteen minute period. The day following, the

section from the knees to the waist is similarly treated, while the legs are exposed for a half hour. Progressively, the entire body is thus subjected to the sunlight and pigmentation consequently effected without sunburn. Needless to observe, while this is the general technique, each patient is carefully supervised by doctor and nurse, and necessary exceptions and compensations are made for idiosyncrasies and general condition.

Parenthetically, it may be stated that deep-seated infections and tubercular laryngitis, as well as kindred infections, are treated by means of the ultra-violet lamp.

It is most inspiring to see hundreds of children of both sexes, ranging in age from 6 to 14, clothed only in trunks and brown skins. Cold does not affect them except in the early morning when light sweaters are indicated for some, though by no means for the majority.

In three weeks an average of three pounds added weight is noted with a corresponding increase in general vitality.

In a brief discussion of this important departure from artificial and restricted therapy to the natural, too much emphasis cannot be placed upon the psychological aspect of the problem. A number of these children come from poor environments where the deadening spiritual influences are uppermost. One has but to see the faces of these little patients, remark their smiles, hear their laughter and watch them play to realize how much therapeutic value is involved in the particularly happy atmosphere in which they find themselves.

In addition to playgrounds, swimming pools, entertainments and a glorious democracy such as is only to be found in grouped childhood, the kindergarten school system, under experienced teachers, functions daily two hours for each patient.

SIGNIFICANCE OF THE TUBERCULIN TEST IN A PASTEURIZED MILK SUPPLY*

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CONSIDERING the vast literature on milk, comprising as it does the subjects of animal husbandry, chemistry, bacteriology, biology, sanitation and epidemiology, one might be inclined to believe that there would be nothing further to say with regard to this important food. But experience teaches that the more we know about milk and its use, the more we realize the limitations of our knowledge as to the exact nature of what we are dealing with. The phase of the subject with which we are concerned at this moment is the public health desideratum that milk must be the normal secretion of a healthy, contented cow and rendered safe by proper pasteurization.

The recognition that much tuberculosis in humans is of bovine origin laid the foundation for the widespread application of the tuberculin test of cattle as a public health measure. However, partly on account of the great economic question involved in this procedure and largely to eliminate the broader epidemiological significance that is involved in the relation of milk to such diseases as typhoid fever, septic sore throat, etc., the process of pasteurization was introduced.

With the widespread application of pasteurization there developed a decreasing emphasis in some quarters on approved sanitary methods of producing milk, based on the idea that since the milk is to be pasteurized, there is little need for much concern as to its healthfulness before such treatment. This idea is unsound because it is contrary to reason and experience.

In the first place, one need not expect that pasteurization or any other process can convert the abnormal milk of a discontented, unhealthy cow into the normal product that would come from a healthy cow. That this is the true public health idea has long been recognized from clinical observation in pediatrics.

The digestive tracts of infants are exceedingly delicate and exhibit reactions, differentiating between milks so similar that the most refined methods of the laboratory cannot detect their difference. For example, nursing of a child by a mother is contra-indicated if the mother is epileptic or tuberculous. Extreme emotions in the mother, such as anger, grief, fright, passion or any great excitement may entirely arrest the secretion or so alter it in composition as to make the child actually ill. Worry or nervous strain may so change the milk that it will disagree with the child who previously thrived well upon it. In the acute febrile diseases of a severe type the quantity of milk is reduced. Moreover, the composition of the milk may be materially altered as becomes evident when one realizes that milk is made from certain constituents in the blood, which in turn are dependent upon the correct utilization of a proper diet. Febrile conditions markedly disturb metabolism and such disturbances may be as great in mild as in severe cases. The supply of salts may be measurably altered. The phosphatid production of fat may be

* Read before the Sixth Annual Eastern States Conference on the Eradication of Tuberculosis in Livestock, at Providence, R. I., June 16, 1925.

disarranged, the nitrogen balance may be upset, and the toxic products may destroy tissue and interfere with its regeneration. In advanced cases of febrile diseases, the milk tends to simulate a fluid closely resembling blood serum.

It is certainly reasonable to suppose that if a child is adversely affected by such an imponderable condition as represented by the temperament of a mother, is it not also reasonable to suppose that it will be affected by such measurable changes as have been observed in the effect of pathological conditions on the composition of the milk?

Just as the above conditions obtain in humans, so similar findings have been obtained in the milk of cows. In fact, workers in animal nutrition have actually measured the difference in the composition of the blood coming to and coming from the udder when the cow's comfort was slightly disturbed. It is a general observation that the fat in milk is often reduced when cows are chased by dogs or otherwise worried. Changes in diet produce marked changes in milk secretion. As discussed by Meigs,[1] this is preëminently affected through changes in the quality and quantity of the amino-acid mixture circulating in the blood. Such changes are brought about by changes in the quantity or quality of the protein fed, and also by marked changes in the quantity of the non-protein portion of the ration. They tend to affect the whole amount of milk yielded rather than the concentration of protein in the milk, though the latter kind of change can easily be detected when the experimental conditions are appropriate. The amino-acid mixture circulating in the plasma seems under certain circumstances to have an effect on the secretion of milk fat.

In view of the fact that the above measurable changes in the quality of the milk may be effected by the nervous condition and the diet, one can readily understand why a febrile condition such as obtains in bovine tuberculosis would cause metabolic disturbances which might deleteriously affect the milk. An infectious disease affects metabolism by changing either chemically or quantitatively the substances entering the body, by altering in the same way substances leaving the body, and by setting up new chemical processes in the tissues themselves.[2] Probably all the tissues in the body are profoundly affected in their metabolic activity, either through the direct action of the toxic substances or waste products, or indirectly through the nervous, respiratory, or circulatory changes.

In view of all these considerations, it becomes at once evident that the process of pasteurization will not correct these conditions. All that it does is to kill infective bacteria which are the organisms causing the common milk-borne contagious diseases—and it does this well. Neither does pasteurization remove the toxic products which were thrown into the milk by the bacteria which formerly lived therein. The only remedy is to get rid of the tubercular cow to start with and then to handle the milk in such a cleanly manner that the subsequent invasion by bacteria will be at a minimum. Pasteurization should then be applied as a safeguard to remove any chances of human infection which may have been imparted during the passage of the milk through the many hands in its long journey under varied conditions of transportation to the far away city.

Another important reason why all pasteurized milk should come from tuberculin tested herds from which the reactors have been removed is the limitation of this process itself. A great deal of careful scientific work has been done in our laboratories in order to ascertain the conditions under which harmful bacteria are to be killed. The experience of the health officers of a large number of cities over many years has clearly shown that with the advent of pasteurization of the milk supply there has been a marked decline in the number of cases of infectious disease. As effective as this process is for the purpose intended, experience

shows that its efficacy must not be presumed on, because like everything else of human origin it has its limitations. These limitations are embodied in the design of the equipment and its operation.

The recent careful study of commercial pasteurization published by the Public Health Service[3] shows quite clearly that all pasteurizing machines did not effectively do their work. Lack of uniform heating, eddy currents, by-passing, dead ends, and such mechanical aberrations militate against effective performance. Moreover, unscrupulous dairymen "flash" a batch of milk through even a holding vat by manipulating the valves by hand, and cover their sin by faking the automatic recorder. We even believe that some dairymen when caught short of their regular milk supply and unable to make up their deficiencies until after their pasteurization plant has closed down, resort to placing their bottles of hastily purchased unpasteurized milk in with their bottles of pasteurized milk in order to fool the inspector, if such should chance to drop around.

We have learned by experience that the farmer who is progressive enough and intelligent enough to go to the expense and trouble of having his herd tuberculin tested and then of keeping it so, is the type of milkman who is most likely to be a real dairyman, and who does the other things which are generally recognized as essential in the sanitary production of milk. He is more coöperative with the health department; he understands what is required; and he is the subject of less regulatory effort than the more or less indifferent farmer to whom a cow is a cow, and to whom milk is milk, and who thinks that all of this talk about clean, pure milk is humbug.

The above considerations are not idle speculations but are now the actual basis of regulatory action by several health departments. The city of Baltimore, Maryland, now requires that by January, 1926, its entire milk supply, whether to be pasteurized or not, must come from herds from which the tuberculin reactors have been removed. The city of Richmond, Virginia, had a little previously adopted the same requirement. Professor Louis A. Klein of the University of Pennsylvania has stated[4] that six (of the smaller) municipalities in Pennsylvania have likewise taken this step.

While fully recognizing the merits of pasteurization as a public health measure, we must guard against taking extreme positions either for or against it. Some poorly informed persons rely on the tuberculin testing of the milking herds and complacent enforcement of general dairy farm sanitation. Others rely altogether on a pasteurization ordinance, overlooking the limitations of mechanical equipment and human effort. In making a case, statistical data has been misinterpreted, as for example Dr. Park's findings of the relatively high percentage of bovine to human tuberculosis in children, published[5] by him in 1910, and have been quoted as indicative of the shortcomings of pasteurization, whereas the New York City regulations concerning pasteurized milk were not enacted until 1912, and it was not until the enactment of the 1914 regulations that all of the New York supply except Grade A was pasteurized.

Thus, in order to obtain the product which we recognize as the public health desideratum, namely, the pure and normal milk of a healthy, contented cow, and furnished in a safe condition to the public, it is necessary that all of the cattle be tuberculin tested to start with. This gives us a milk which is of high quality. It will be produced and handled by a careful and intelligent farmer and then, last of all, it is to be effectively pasteurized. We cannot rely upon tuberculin testing alone, for it is not 100 per cent effective[6]; neither is pasteurization alone; but if we combine the two processes, we have instituted about as perfect a safeguard as we can erect for the benefit of the industry and the public.

As Chief Dairy Inspector Strauch of Richmond has so well said, the eradication

of tuberculosis from dairy herds supplying a city with milk is a health measure, and, as we all know, pasteurization is not 100 per cent perfect at all times; so that if all cows supplying milk have successfully passed the tuberculin test, it is clear that another very valuable factor of safety has been added to the milk supply. Conditions being equal, he points out, a healthy herd of cattle will produce more milk at a lower cost than a diseased herd, which should prove advantageous to both producer and consumer.

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THE AUTOMATIC FAUCET A POSSIBLE VECTOR OF INFECTION

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THE PUBLIC drinking cup in public places has disappeared forever in America, for the bubbling fountain has taken its place everywhere in cities. But there are still other, and in part, new opportunities for direct transfer of infectious saliva from the lips of diseased persons and carriers to those who are healthy, and it is our purpose here to call attention to a possible danger in a type of automatic faucet or tumbler filler, often used in restaurants and cafeterias.

The one to which we find objection consists of a rubber covered cross bar against which the lips of the glass are pressed, thereby releasing a flow of water into the glass. The removal of the glass stops the flow of water. If only clean glasses were used there would be no objection. But one often observes a customer swallowing the contents of his or her glass at the fountain and refilling or coming back from the table for more. Indeed the possibility of salivary transfer occurred to the senior writer recently when he found himself doing this very thing. It is evident that fresh saliva from the lips of a used glass may be conveyed directly to the next one placed in position and the frequency with which such an apparatus may be used even in a small establishment suggests that infectious diseases may be so transmitted.

The prevalence of this particular device for watering the thirsty is, of course, conjectural. One of us (W) made a survey of public eating places in Ithaca, and found such an apparatus in three places out of twenty-two visited, but only two were in actual use. They are probably more common in larger cities. Our opportunities for practical proof were thus decidedly limited but we attempted, nevertheless, to secure experimental data by swabbing the lower surface of the bars during the meal hour with sterile cotton wrapped applicators. These were transferred at once to tubes of sterile water (10 c.c. each) and taken to the laboratory where serial dilutions in brain medium and deep nutrient agar were made and incubated at 37° C. These

media were used for their demonstrated value in detecting the characteristic bacteria of the mouth.

What these are deserves some discussion. That the acid forming streptococci are most numerous in the saliva requires no argument. Winslow and Sanjiyan[1] recently reviewed the evidence but concluded that rather definite limits must be set to the categorical use of the lactose fermenting streptococci as indicators of recent salivary pollution, owing to their wide distribution in locations not subject to such contamination.

It was our hope to utilize M. gazogenes (Lewkowicz) whose general occurrence in saliva has been indicated by Holman and Krock[2] and the more recent work of Hall and Howitt.[3] By making serial dilutions of freshly collected saliva, we have almost always been able to detect 1 part in 100,000 by the production of gas in brain medium and deep agar by this species, though it should be noted that Streptococcus viridans could be isolated from even higher dilutions, up to 1 part in 10,000,000. If M. gazogenes were found it would, therefore, be even more conclusive than streptococcus, though admittedly we know as yet nothing regarding the occurrence or persistence of M. gazogenes outside the mouth.

However, we were unable to prove the salivary contamination of the automatic faucet bars in the few tests made. There are, of course, bacteria upon the bars showing generally in dilutions of the wash water at 1–10, and 1–100. But the deep agar cultures showed almost exclusively obligate aerobes, rather than facultative and obligate anaerobes such as one encounters in diluted saliva. And neither the Gram stained smears nor the blood agar subcultures from the brain tubes showed the usual mouth flora, but only those organisms that are characteristic of dust from the air.

Yet we are unwilling to let the matter rest there. In attempting to test the possibility of salivary pollution, we have made several assumptions which may prove unfounded. The whole question as to what constitutes a true criterion of salivary pollution should be re-investigated with special reference to M. gazogenes as well as Streptococcus viridans and the strong probability that the automatic faucet of the type prescribed sometimes does transmit disease should be considered.

Meanwhile there seems to be no good reason for permitting the use of a type of apparatus which may obviously contribute to the transmission of disease, even if it actually does so only occasionally. There are other forms of automatic faucet to which this objection cannot be raised, such for example, as those in which the bottom of the glass is pushed down, or in which the sides are pushed against the lever that controls the flow, not to mention the faucets operated by the hand or foot, or allowed to run continuously during the meal hours as in some places.

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USE OF HEMOLYZED SPECIMENS IN THE KAHN TEST

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THE SEROLOGICAL examination of hemolyzed blood specimens is a problem of considerable importance in a public health laboratory. Many of the specimens are mailed from considerable distances and thus subjected to marked changes in temperature as well as other conditions favoring hemolysis. In the laboratories of the Michigan Department of Health during the seasons when the temperature changes are extreme, there may be as high as 5 per cent of a daily run of specimens which are too badly hemolyzed for use and many others which show slight or moderate hemolysis.

It is generally recognized that Wassermann results with hemolyzed serums are not entirely dependable. Such serums may show non-specific absorption of complement—due, it is believed, to the presence of cellular substance released by the hemolysis of red cells. The color of the specimen, moreover, interferes with the scale of reading the Wassermann results. These factors may explain why in the serological laboratory of the Massachusetts State Department of Health,[1] Wassermann results with all specimens showing hemolysis are checked by the Kahn test.

As to the use of hemolyzed specimens in the Kahn test, experience in this laboratory has suggested that such specimens, at least when hemolysis is only slight or moderate, may be run with safety. The present study was undertaken in an effort to experimentally determine whether the Kahn test with hemolyzed specimens—especially those showing more extreme hemolysis—is reliable.

EXPERIMENTAL

The 360 specimens included in the study were selected from those sent to this laboratory for examination. After sufficient serum had been removed for a routine test, the remainder of each specimen was used for the experimental work. In each case sufficient clear serum was removed for a control and the rest of the specimen hemolyzed artificially. The hemolyzed specimens were employed in the Kahn test, in comparison with the non-hemolyzed controls.

The specimens were divided into four series according to the method used for producing hemolysis. The 20 blood specimens comprising the first series were shaken vigorously in an effort to disrupt the corpuscles. The hemolysis in these specimens varied from slight to moderate.

In a second series, 100 specimens were heated at 56° C. for 10 minutes before the removal of the blood cells. These specimens showed hemolysis varying from moderate to extreme.

In a third series, 150 specimens were heated for 30 minutes instead of 10. All these specimens showed extreme hemolysis.

In the fourth series of 90 specimens, hemolysis was produced with the aid of ether. A quantity of corpuscles from non-syphilitic serums was washed with normal saline three times. After the third centrifugation the supernatant fluid was pipetted off and ether added, drop by drop, until the cells were apparently in solution. The resulting dark mixture of hemolyzed cells was agitated until entirely free from ether odor. The mixture

was then diluted with half its volume of normal saline, filtered and centrifuged to remove cellular elements. Approximately 0.03 c.c. of the dark supernatant fluid was added to each specimen—enough to produce the appearance of extreme hemolysis.

Of the 360 serums examined, 59 were positive and 300 negative in both the hemolyzed specimen and the non-hemolyzed control. The serum giving a positive reaction (+++) in the hemolyzed specimen and only a doubtful in the non-hemolyzed control was from a case of tertiary syphilis, according to the history on the accompanying blank. The reason for the stronger reaction in the hemolyzed specimen is not clear. There was insufficient serum to repeat the test. Certainly no conclusion can be drawn from one case, but the reaction cannot be considered a false positive.

TABLE I

KAHN RESULTS WITH HEMOLYZED SPECIMENS

Series No.	1	2	3	4	Totals
Methods of producing hemolysis	Vigorous shaking	Heating at 56° C. 10 min.	Heating at 56° C. 30 min.	Use of ether	All methods
Reactions showing agreement with controls*					
Positive	4	19	19	17	59
Negative	16	80	131	73	300
Positive reaction with doubtful control *		1			1
Totals	20	100	150	90	360

* Control = non-hemolysed specimen.

All the specimens were centrifuged at high speed to free them from cellular debris and foreign particles. (Clarity of serums is essential in the Kahn test and it requires especial care to render hemolyzed specimens entirely clear.) All serums were inactivated for 30 minutes at 56° C. In series 2 and 3, the period of heating the specimen before the removal of the clot was considered a part of the inactivation period.

Due to the relatively small quantities of serum available, it was necessary to use only one proportion of serum and antigen dilution in the performance of the Kahn test. The second tube of the routine test with serum was used—0.025 c.c. antigen dilution—0.15 c.c. serum. The test was performed according to the standardized technic described by Kahn.[2]

The findings with the four series of specimens are summarized in Table I.

The findings with the relatively large number of negative serums are of especial importance since they indicate that hemolysis of specimens does not lead to falsely positive reactions.

CONCLUSION

We conclude from the data presented that the results with hemolyzed specimens in the Kahn precipitation test are reliable.

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VITAL CAPACITY OF CHILDREN INFECTED WITH HOOKWORM*

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THE VITAL capacity of all school children examined in Covington County, Alabama, has been determined as a routine procedure. Practically all children have also been examined for intestinal parasites and it was found that 98 to 99 per cent of the rural school children were infected—to a greater or lesser degree—with hookworm. Thus an important factor was introduced into the question of the school examinations, namely, whether the harboring of hookworm, with its attending effect upon the general health of a child, affects in any way the vital capacity of that child, and if so, to what extent. In other words, can studies upon the vital capacity of children infected with hookworm be compared with studies made upon children not so infected? In order to answer this question the present preliminary study was undertaken.

There are several difficulties, however, in reaching a satisfactory conclusion. The present study is the first of a series undertaken to solve this problem. It includes cases with all degrees of infection and is merely a preliminary study of the general population. Work is now under way in which ova counts and worm counts are being made to determine intensity of hookworm infection and to study the relation between the vital capacity and hookworm infection, both before and after treatment. In this way we hope to determine to an exact degree the effect of hookworm upon vital capacity.

Those who are not familiar with the clinical manifestations of hookworm infection and hookworm disease will find an excellent study by S. T. Darling.[1] It is presumed that the effect of the worms upon the strength of the heart and the general tone of the child will probably affect the vital capacity.

In order to determine accurately whether or not hookworm infection affects the vital capacity of the child population our data must conform to the following conditions: The group selected should form an adequate sample of the child population, and all other factors which might exert an influence should be accounted for. We have made an earnest attempt to choose our data in such a way that both of these conditions might be fulfilled. We selected 1,000 children, chosen at random from various parts of the county. All cases were from the rural population and formed more than 10 per cent of the child population from 6 to 18 years of age. This we considered an adequate sample since the total population was 38,000. No known cases of tuberculosis or heart disease were included. As determined by the latest available Baldwin tables, many children were underweight, but Wilson and Edwards[2] determined that underweight for height does not influence the vital capacity. Thus, by choosing cases with no evidence of tuberculosis or heart disease, we may fairly assume that hookworm is the only factor that might influence the vital capacity of this group of children.

MATERIAL AND METHODS

The stools of the children selected were examined for the ova of hookworm, by

* The field work for this study was done at the International Health Board's Training Base, Andalusia, Alabama.

the brine flotation method. All children had positive stools. About 25 of these children were later excluded from the data due to manifest errors in the copying of the records and for various other reasons, leaving the number approximately 975.

Each child was weighed on an accurately calibrated scale. All were barefoot and in summer clothing, which in southern Alabama consists of a pair of overalls and a shirt for boys and a one piece dress and light underclothes for the girls. No correction was made for the weight of the clothing. The height was taken in centimeters with the child standing against a perpendicular wall. The sitting height was taken with the child sitting on the floor against a wall. Both standing and sitting height were taken with standards manufactured by the Narragansett Machine Co., which are very accurate. The vital capacity was taken with a Sanborn wet spirometer and read to the nearest 25 c.c. The readings were taken by groups, in order to introduce the factor of competition and thus secure the best effort of which the child was capable. The highest of three trials was chosen as the vital capacity of that particular child. No corrections were made for aqueous vapor tension, temperature or barometric pressure. The figures were arranged with reference to standing height, sitting height, body weight, age, and body surface. In cases of the standing height, sitting height, age and weight groups, the figures were compared with those determined by Stewart [3] for normal Minnesota children.

In each group consisting of 20 or more children the standard deviation and probable error of the mean was calculated. The standard deviation was calculated from the formula $S.D.=\sqrt{\frac{Sd^2}{N}}$, where S.D.=standard deviation, Sd^2=the sum of the squares of the deviants and N=the number of observations. The equation $P.E.=.6744898\ \frac{S.D.}{\sqrt{N}}$, where P.E.=probable error of the mean, S.D.=standard deviation, and N=number of observations, was used to ascertain the probable error. The value of $\frac{.6744898}{\sqrt{N}}$ can be found in Pearson's Tables for Statisticians and Biometricians. The coefficient of variation was found by determining what per cent of the average vital capacity was formed by the standard deviation.

The significance of the standard deviation is discussed in any volume on statistical theory. Suffice it to say that the probable error of the mean determines the limits into which at least 50 per cent of the observation made at random upon an infinitely large number of cases should fall. The standard deviation indicates the approximate limits within which the measurements obtained are more likely to be normal. In other words, the greater the variation beyond the limits of the standard deviation the greater the chances are that the measurement is abnormal.

It should be borne in mind that Stewart's study included more than twice the number of individuals and accordingly his standard deviations would have a tendency to be smaller as would also his probable error of data.

In the graphic presentation of the observations we felt that the number of cases was too small to justify mathematical treatment. The actual observations are plotted and a curve drawn which probably very nearly represents the mean. The curves are irregular in many places due to the small number of observations, but a larger number of cases would probably smooth the curves considerably.

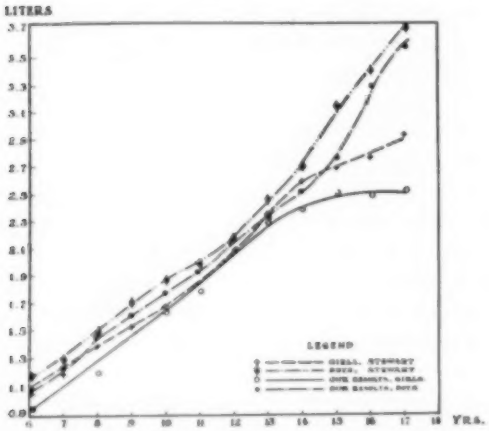
The body surface in each case was calcalculated from the formula of DuBois and DuBois,[4] namely, area (Sq.cm.)= Wt. $^{0.425}$ x Ht. $^{0.725}$ x 71.84. The results are shown graphically in Figures V, VI and VII.

OBSERVATIONS

1. *Relation of Age to Vital Capacity.*

Figure I shows the relation between age and vital capacity. In the case of the girls the curve is more uniform than one would imagine, but this is probably merely a coincidence, as age is a very unsatisfactory standard for determining vital capacity. This is shown by the relatively large coefficients of variation noted which ranged from 12.9 per cent to 25.3 per cent. In Stewart's case the coefficient of variation did not exceed 18 per cent. An inspection of our individual cases showed, however, a great fluctuation in both height and weight in the age groups, which would account for the variation.

FIGURE I



Showing smoothed curves representing the average increase in the vital capacity of the lungs of boys and girls between 6 and 17 years of age inclusive. Stewart's actual results are plotted in the same manner as ours in order to compare the curves. Vital capacity in liters is represented on the ordinate and the age in years on the abscissa.

As previously described, the coefficient of variation is calculated from the standard deviation. In our cases and those of Stewart the standard deviation is large in the different age groups. This is due to factors already discussed, namely, the variation in height and weight for each group. We found that the vital capacity of a child 12 years old might vary 326 c.c. on either side of 2171 c.c. and still not be abnormal.

It was also observed that there was no great uniformity in the absolute annual increase in our cases. This is further evidence that age alone cannot be depended upon to determine the normal vital capacity. The total increase for the girls was 1903 c.c., more than 207 per cent. For the boys, the total increase was 2353 c.c., or more than 244 per cent. The coefficient of variation ranged from 14.7 per cent to 24.6 per cent.

In comparing the age groups with respect to vital capacity, we found that in each case, with the exception of the 9 year old children, the vital capacity observed by Stewart exceeded our observations. In most cases this difference was small, but in order to ascertain whether or not this difference was significant we used the following formula: $P.E._{x-y} = \sqrt{P.E._y^2 + P.E._x^2}$, where $P.E._{x-y}$ is the probable error of the difference between our observations X, and the observations Y of Stewart and $P.E._x^2$=the square of our probable error and $P.E._y^2$=the square of Stewart's probable error. It was assumed that when the difference was four times its probable error, that there was some significance in the difference. In only four cases, the 6-year, 8-year, and 14-year groups of girls and 15-year group of boys, the difference was at least four times its probable error. Just what this significance is, we have not as yet been able to determine.

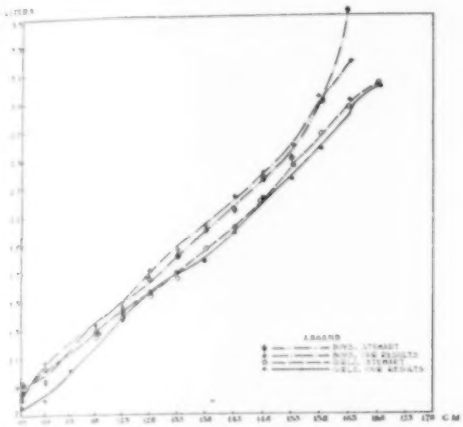
In the graphic presentation of the age-vital capacity relation, our curve for the boys agrees in contour very closely with that of Stewart. In the case of the girls, our curve follows the same trend up to the age of 15, and then straightens out, while Stewart's curve continues upward. As pointed out by many observers, the vital capacity of the girls is less throughout than that of the boys, the difference in our cases being 132 c.c. at 6 years and at the age of 16 reaching 787 c.c.

2. *Vital Capacity and Standing Height.*

In comparing the vital capacity for each group and sex arranged with reference to standing height, it is seen in Figure II

that they agree closely with those determined by Stewart. For instance, the boys of 133 cm. are within 1 c.c. of the boys of the corresponding height group of Stewart.

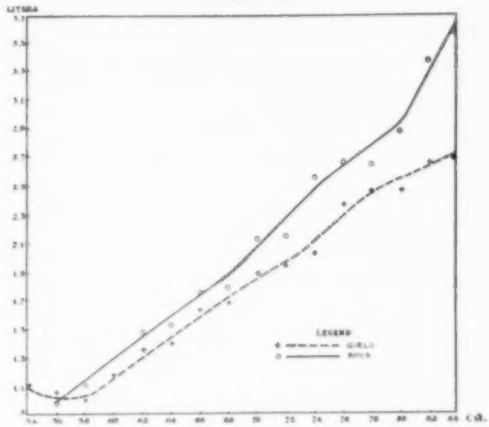
FIGURE II



Showing smoothed curves representing the average absolute increase in the vital capacity of the lungs of boys and girls with each 5 cm. increase in standing height. Stewart's actual results are plotted in the same manner as ours in order to compare the curves. Vital capacity in liters is represented on the ordinate and the standing height in centimeters is represented on the abscissa.

The curves of vital capacity plotted against standing height show the same general shape as do those of Stewart, the concavity in the curve being more marked in the case of the girls than in that of the

FIGURE III



Showing smoothed curves representing the average absolute increase in the vital capacity of the lungs of boys and girls with each 2 cm. increase in sitting height. The vital capacity in liters is represented on the ordinate and the sitting height in centimeters on the abscissa.

In turning to the standard deviations we see a great divergence. In the smaller children this difference ranges from 50 to 100 c.c., which is not great, however, when we consider that Stewart had more than twice the number of cases. This would also explain the difference in the probable error since the error is smaller with increasing values of N.

Comparing the actual values obtained from the children suffering with hookworm we found that they were approximately the same as those obtained with normal Minnesota children. In every case the difference was well within the limits established by the standard deviation. In no case was the difference four times its probable error; so we are safe in assuming that the differences observed are not significant.

The absolute increase from 103 cm. height to 168 cm. was 2,580 c.c. in the case of the girls, and 3,550 c.c. for the boys with a corresponding increase in standing height of 180 cm.

boys. Accordingly, the increase in vital capacity with the increasing height is more regular in the girls' group. After the boys have reached 158 cm. the increase is very rapid.

As would be expected from the shape of the curves the coefficient of variation and the probable error are smaller when considered from the viewpoint of standing height than they are when only age is considered.

In agreement with the findings of Stewart our data show that there is no regularity in the absolute gain in vital capacity with increasing standing height, and from this we may conclude that in childhood the vital capacity is not a simple function of standing height.

3. *Vital Capacity and Sitting Height.*

Figure III shows the result obtained when the subjects were arranged in groups differing 2 cm. in sitting height. Our cases were grouped in units ranging from 56 to 92 cm. sitting height for the

boys and 54 to 86 cm. for the girls. Stewart's cases were arranged in groups from 53 to 95 cm. for the boys and 51 to 91 cm. for the girls; for this reason it is difficult to compare our results directly. However, allowing for the differences in sitting height in the smaller number of cases, there was no indication that the vital capacity of our cases was less than those of Stewart.

Our standard deviations were greater than those obtained on Minnesota children. However, there was a great deal of individual variation in our cases and striking differences in weight and age in each group. Considering that 29.5 per cent of the boys and girls we studied were 10 per cent or more underweight, we might expect to have some variation in the vital capacity.

Coefficients of variation decreased with increasing vital capacity and increasing stem length. This was also the case in Stewart's study.

The absolute increase in vital capacity was 3,710 c.c. for the boys ranging from 56 cm. to 92 cm. on sitting height, a total range of 36 cm. For the girls the absolute increase was 2,186 c.c. for a range in sitting height of 32 cm.

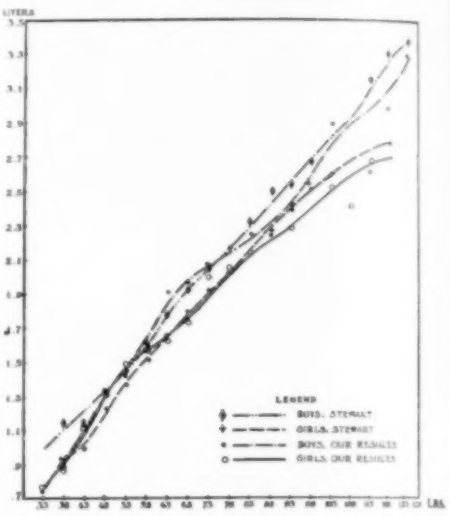
The curves plotted for sitting height show that between 54 and 56 cm. of sitting height, the vital capacity of the lungs of the girls exceeds that of the boys. We observed this when we plotted trial curves for 200 cases, and the same feature was found in more than 400 cases. In Stewart's curves we noted this between 53 and 55 cm. The pronounced convexity of our curve for the girls may possibly be explained by the small number of cases. The curve for the boys agrees very closely in general form with Stewart's.

4. *Vital Capacity and Body Weight.*

Figure IV shows the results obtained when the children were grouped according to gross weight in pounds. Each group differed by 5 pounds.

For the boys, an increase of 120 pounds in gross weight was accompanied by an increase of 3,750 c.c. in vital capacity. That is, the weight increased 36.3 per cent and the vital capacity increased 500 per cent. Excluding one group with only a few cases, which shows a wider divergence than was normal for the other groups, we found an increase of 44.2 per cent in vital capacity and 34.8 per cent increase in gross body weight, showing that the vital capacity for the boys increased more rapidly than the body weight. Stewart also notes this fact, although the difference was not so marked as in our series. Again, in comparing the actual results we obtained and those obtained by Stewart, we noted that there was no great difference, the children with hookworm infection holding their own very well.

FIGURE IV



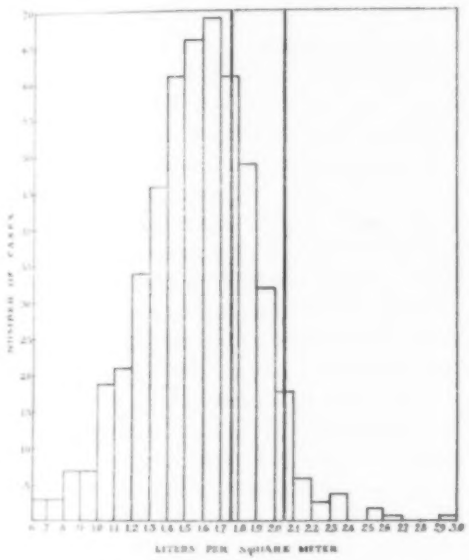
Showing smoothed curves representing the average absolute increase in the vital capacity of the lungs of boys and girls with each 5 pounds increase in body weight. Stewart's actual results are plotted in the same manner as ours in order to compare the curves. Vital capacity in liters is represented on the ordinate and the body weight in pounds on the abscissa.

For the girls, the vital capacity showed an absolute gain of 2,234 c.c., or 29.1 per cent, while the weight increased 100 pounds, or 30.3 per cent. The weight, therefore, increased more rapidly than did the vital capacity. This fact was also noted by Stewart. He discusses very fully the question of the relation of weight to vital capacity as determined

by Dreyer's[5] formula $\frac{W^{0.72}}{V.C.} = K$ where W = weight in grams, V.C. = Vital Capacity in c.c. and K is a constant. Stewart proves this formula will not hold for children.

The curves resulting from plotting weight against vital capacity show more convexity than do those in the series. Our curve for the boys is much more sinuous than that obtained by Stewart, but for the girls the curves agree very closely in their general contour, both showing a marked convexity.

FIGURE V

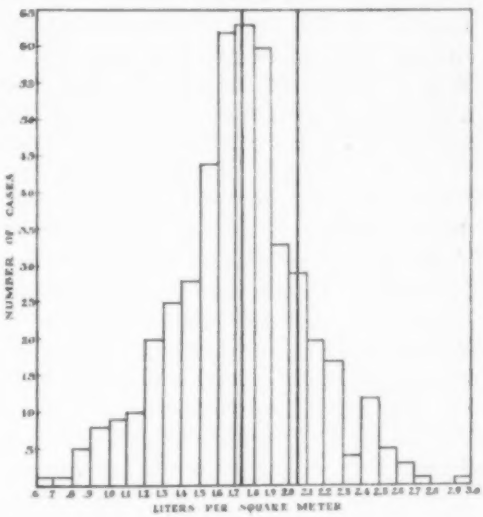


A histogram showing the relation between the body surface and the vital capacity of the lungs of girls. Liters of air expired per square meter of body surface are represented on the abscissa and the number of cases in each group is represented on the ordinate. The vertical lines extending through the histogram near the center represent the normal limits set by Wilson and Edwards.

5. *Vital Capacity and Body Surface.*

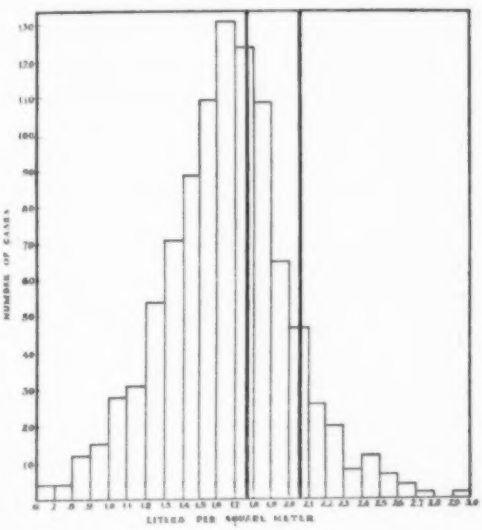
According to Wilson, Edwards and Liss[6] the normal range of vital capacity is between 1.74 and 2.14 liters per square meter of body surface. Their study was based on 360 normal children of both sexes. In Figures V, VI, and VII we have shown our cases arranged with reference to surface area and vital capacity. The heavy black lines indicate the normal limits set by Wilson, Edwards and Liss. The results for the girls are shown in Figure V. It will be noted that

FIGURE VI



A histogram showing the relation between the body surface and the vital capacity of the lungs of boys. The liters of air expired per square meter of body surface are represented on the abscissa and the number of cases in each group on the ordinate. The vertical lines extending through the histogram near the center represent the normal limits set by Wilson and Edwards.

FIGURE VII



A histogram showing the relation between the surface area of the body and the vital capacity of the lungs—both sexes. The liters of air expired per square meter of body surface are represented on the abscissa and the number of cases in each group on the ordinate. The vertical lines extending through the histogram near the center represent the normal limits set by Wilson and Edwards.

336 girls, or more than 65 per cent, fall definitely below this level, and a little over 3 per cent are definitely above the standard. In Figure VI the graphic presentation of the vital capacity of the boys is shown. In this case 46 per cent of the children fall below the standard set by Wilson *et al.*, and 13 plus per cent definitely exceed the limits. Thus we see that when the sexes are taken separately that from 46 to 65 per cent of the cases are below the standard set for normal children. Taking both sexes together, as shown in Figure VII, it will be noted that 545 cases, or more than 55 per cent, fall below the standard and 80 cases, or slightly more than 8 per cent, exceed the standard. In all calculations of the sexes together or separately we have widened the standard to include all cases ranging from 1.7 liters per square meter of body surface to 2.1 liters per square meter; yet most of our cases fall below the standard.

These facts are hard to explain. We know that 45 per cent or more of our cases did not have either tuberculosis or trachea-bronchial adenitis. The morbidity reports for the county do not give credence to such a theory. On the other hand, in view of the fact that in all other particulars our cases agree so closely with those of Stewart working on normal children, we do not believe that our cases are so far below normal as regards surface area.

However, there is one possible explanation—about 29 per cent of our cases were 10 per cent or more underweight (estimated on Baldwin's tables) and this would give a relatively larger surface area than would be the case in heavier children. Accordingly, the liters of air expired for each square meter of body surface would be less; yet such an explanation would not agree with the findings of Wilson and Edwards that underweight for height does not affect the vital capacity. We are face to face with the following conditions: either the standard set by Wilson, Edwards and Liss is too high, or else hookworm infection lowers the vital capacity in relation to surface area. Subsequent studies made before and after treatment will answer this riddle.

SUMMARY AND CONCLUSION

1. Hookworm infection does not materially decrease the vital capacity of the child population between six and eighteen years of age when this population is considered as a whole.

2. Hookworm infection might possibly affect the vital capacity when it is considered in relation to the surface area of the body.

3. As far as sitting height, standing height, age and weight are concerned, we can conclude that underweight for height does not materially reduce the vital capacity of children of school age when the group is considered as a whole.

4. The fact that our standard deviations were much larger than Stewart's would indicate that some individuals in each group were abnormal. The work now in progress on worm counts and vital capacity before and after treatment will aid materially in clearing this point.

We wish to extend our thanks to the International Health Board at whose training base the figures were collected, and the State Department of Public Health of Tennessee which has given financial aid in the compilation of the data and has at all times taken a keen interest in the work.

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THE RUPP METHOD FOR THE DETECTION OF CHLORINE IN MILK*

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PROBABLY no food product is more susceptible to spoilage through bacterial activities than milk. Given the proper temperature, milk will deteriorate despite the most scrupulous care that the producer may exercise in the matter of cleanliness. Bottlers of milk have long realized this and, accordingly, the more exacting are using all possible means to protect their milk supply from bacterial contamination. One of the greatest aids toward this end is the thorough sterilization of the containers and utensils with which the milk comes in contact.

Of the many agents which might serve for this purpose, apparently the hypochlorites and chloramines are most favored by dairymen. Several articles dealing with the use of chlorine compounds for sterilizing dairy utensils have appeared in the literature. G. B. Taylor[1] discusses the action of calcium hypochlorite as a suitable means for sterilizing dairy utensils. This author lays particular stress upon the necessity for cleanliness in order that the hypochlorite may have the desired action, and cautions against the unrestricted use of sterilizing solutions. Hale and Bleecker[2] discuss the use of sodium hypochlorite as a germicide for milk and milk products. They state, "Chlorin water gives as satisfactory results in 45 minutes as sodium hypochlorite does in 90 minutes or calcium hypochlorite in 19 hours. . . . It is not the wish of the authors that this paper be considered in any way as a recommendation of chlorin for treating market milk."

Leech[3] points out that hypochlorites and chloramines have a common characteristic, *i.e.*, a positively charged chlorine atom, which is relatively unstable and has a tendency to go over into the more stable negative atom. Hence, both of the compounds are active oxydizing agents and it is to this property that Leech attributes their antiseptic and germicidal action.

Of the chloramines, "Chloramine T" is the most commonly used for general disinfecting purposes. This compound, identified chemically as sodium paratoluene sulfochloramide, has disinfecting properties similar to those of sodium hypochlorite. It has, however, the added advantage of greater stability. "Chloramine T" is a white crystalline powder containing from 12 to 13 per cent available chlorine and is freely soluble in water.

It would seem, because of the active chlorine contained in chloramines and hypochlorites, that there should be no difficulty in detecting the presence of small quantities of these substances when added to milk. However, it is apparent that the test for identifying the minute quantities which might remain in a milk through the washing of utensils with a solution of one or the other of these substances would have to be extremely sensitive.

Rupp, of the Bureau of Dairying of the U. S. Department of Agriculture, has investigated the question of the detection of chloramines and hypochlorites in milk and cream.[4] He says, "Very small quantities of chlorin in water solution can easily be detected, either by means of the iodid-starch or the o-toluidin test. How-

* Approved for publication by the Secretary of Agriculture, July 2, 1925.

ever, when applied to milk containing small amounts of chlorin, these tests are of no value because the chlorin has combined with the protein of the milk and is not liberated readily at room temperature by the addition of acid."

Recognizing the disturbing influence which the protein content of milk has upon the liberation of chlorine, Rupp conducted experiments for the purpose of establishing the most satisfactory conditions for the elimination of this trouble. He finally adopted the procedure in which heat is applied to the acidified milk to break up the protein-chlorine combination. The chlorine having been thus liberated is then permitted to react with potassium iodide to form free iodine, which is finally identified by the blue color produced with starch. The author of the test concludes: "One part of chlorin in 50,000 parts of milk or cream can be detected by this method."

Rupp directed his efforts to the detection of *added* chlorine in milk. As Zoeller[5] has shown, the presence of free chlorine in a milk may be readily recognized by the blue color which the starch-iodide reagent produces when applied directly without acidifying the sample. This author states that a trace of sodium hypochlorite added to milk fails to give a color with starch-iodide and that a large quantity gives a blue color. The following statements by this author are given verbatim: "Now if we add some strong acid (HCl) to the milk containing a trace of sodium hypochlorite, we will get a bluish violet coloration with the starch-iodide. It is evident that in this latter case we have the product or products of the chlorination furnishing sufficient of some oxidizing substance in the presence of the strong acid to cause the liberation of a trace of iodine. But it would be an error to interpret this as coming directly from sodium hypochlorite." In other words, Zoeller believes that a blue color obtained by starch-iodide when milk is acidified and heated is not necessarily due to chlorine. However that may be, it cannot be disputed that a reaction with starch-iodide indicates the presence of chlorine or products directly traceable to the use of chlorine. Although the choice of title for Rupp's paper may be unfortunate, inasmuch as the iodine liberated is not necessarily due to chlorine, the method for detecting the use of chlorine in milk has not, to my knowledge, been questioned.

It has come to the attention of the Bureau of Chemistry that in using the Rupp test, copper in milk gives a reaction similar to that of hypochlorites and chloramines. It is well known that copper will liberate iodine from a potassium iodide solution: $2\ Cu + 4I = Cu_2I_2 + I_2$. It is also known that fresh milk normally contains small quantities of copper. Furthermore, it is possible that the quantity of copper may be increased to the point where enough copper is dissolved through contact with this metal in the course of the bottling process to give the Rupp test. Therefore, it would not be safe to assume that a milk which reacts to the Rupp test contains added chlorine.

In order to determine to what extent copper interferes with the reliability of the Rupp test, experiments were made with fresh milk and milk to which copper had been added.

For the determination of small quantities of copper, the "potassium ethyl xanthate" method described by Scott and Derby[6] was used. This method is based upon the yellow color which the xanthate reagent produces with copper, the intensity of which is matched against copper solutions of known strength. Table I gives results obtained:

TABLE I

Sample	Description of Sample	Copper (Cu) (mgs. per liter)
1	Fresh milk free from copper contamination	0.75
2	Fresh milk free from copper contamination	0.65
3	Bottled market milk	0.60
4	Bottled market milk	0.40

Samples 1 and 2 are known not to have come in contact with copper during the handling of milk, showing that fresh milk contains a little copper as a normal con-

stituent. These results agree very well with those found by Supplee and Bellis,[7] who report from 0.2 to 0.8 mg. of copper per liter (average 0.52) for 23 samples of fresh cows' milk. Expressing the average obtained by these observers in a ratio of dilution, 1 part of copper is contained in 2,000,000 parts of milk.

Samples 3 and 4 represent ordinary bottled milks sold in the market. From the low copper content as compared with that of fresh milk, it may be assumed that these milks could not have been in contact with copper long enough or the acidity of the milk sufficiently high to effect a solution of copper.

For the purpose of obtaining information regarding the disturbing influence which copper exerts on the Rupp procedure, a number of tests were made with milks containing varying quantities of added copper. A series of samples were prepared by adding known quantities of copper in the form of copper sulphate to fresh milk, namely, 1 part of copper to 100,000 parts of milk, 1 to 66,000, 1 to 50,000, 1 to 40,000, and 1 to 33,000. All of these dilutions upon heating gave a slightly yellowish serum of somewhat varying intensities. On cooling and adding starch solution a blue color was produced in all cases. It was noted, however, that sometimes the solution containing the smaller quantities of copper had a slightly deeper color than those containing more copper. Further experiments were made with milks containing still smaller quantities of copper, with the results shown in Table II.

From these results it would seem that a copper content of 1 part per 500,000 parts of milk might be accepted as the limit of sensitiveness for copper when applying the Rupp test. However, further experiments led to the conclusion that 1 part per 425,000 is a better limit upon which to base a positive reaction. In these experiments fresh milk was used and no consideration was given to the minute traces of copper that milk normally contains.

The tests show conclusively that copper interferes with the Rupp test. They show also that the sensitiveness of the test is very much greater for copper than for chlorine. Rupp found that the test would show the presence of 1 part of chlorine in 50,000 parts of milk; the experiments here described indicate that the test will show with certainty one part of copper in 425,000 parts of milk. The sensitiveness of the Rupp test is, therefore, at least eight times as great for copper as for chlorine.

Although it seemed unnecessary to try the method on milks containing added chlorine, for the sake of completeness tests were made on milk to which chlorine antiseptics had been added. Results are shown in Table III.

From this investigation it is evident that the Rupp test is not reliable for the detection of added chlorine in milk when the milk contains more than 1 part of copper in 400,000 parts. As has been shown, fresh milk contains very much less copper than 1 part per 400,000. It may, therefore, be assumed that the Rupp procedure is admissible for testing a fresh milk for chlorine. In fact, in all the tests made on fresh milks, including bottled market

TABLE II

	Parts of Copper (Cu)			
5 c.c. Milk	1 to 560,000	1 to 500,000	1 to 400,000	1 to 200,000
1.5 c.c. KI solution added	no color	no color	no color	no color
4 c.c. HCl added	no color	no color	no color	no color
Heated to 85° C. for 10 min.	faint yellow	light yellow	light yellow	light yellow
Cooled and starch added	reddish brown	light blue	light purple	dark blue

TABLE III

	Parts of Chlorine (Cl)			
5 c.c. Milk	1 to 7,750	1 to 10,000	1 to 15,500	1 to 20,000
1.5 c.c. KI solution added	no color	no color	no color	no color
4 c.c. HCl added	cream yellow	pale yellow	distinct yellow	no change
Heated to 85° C. for 10 min.	color slightly less	distinct yellow	pale yellow	no change
Cooled and starch added	light blue	light blue	brownish purple	light blue

milks, the Rupp test gave negative results. Nevertheless, it is conceivable that under certain conditions bottled milk might take up enough copper to give a positive reaction with the Rupp test. It would seem, therefore, that in case a milk gives the Rupp test, the copper content of the milk should be established in order to avoid an erroneous conclusion as to the presence of added chlorine.

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THE COST OF A PRESCHOOL HEALTH SERVICE

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WHILE THERE is now fairly general appreciation of the needs of the preschool child, few communities indeed have actually taken the necessary steps to see that the "neglected age" receives its fair measure of protection and guidance. Beside the indifference and ignorance of parents, most communities are confronted with the problem of devising an efficient and economical procedure for bringing the children of this age under group care. The experience of the Mulberry Health Center, of New York City, organized and maintained by the Association for Improving the Condition of the Poor, which has been wrestling with this problem, may be of value to other communities.

For six years the Mulberry Health Center has maintained both a medical clinic for the periodical examination of preschool children and a nursing staff for follow-up work in the home to see that the doctor's recommendations are carried out. At first, the children were recruited from those families in which the mother had received prenatal nursing care from the health center. Experience has shown, however, that a much larger proportion of the total preschool population can be brought under care through the coöperation of the health department and the schools of the area.

A COOPERATIVE UNDERTAKING

In the spring of 1923, a coöperative plan for recruiting preschool children was inaugurated. The plan has proved so satisfactory that with certain improvements and modifications it has been repeated each year. In the development of the plan the health center has set for its ultimate goal the reporting of 100 per cent of the children entering school for the first time free from physical defects. Since both the schools and the Department of Health are concerned with the early detection and removal of physical defects of school children, their hearty coöperation was immediately forthcoming.

Briefly, the plan is as follows: Early in the spring, the children attending the public and parochial schools of the area report to their teachers the names of their younger brothers and sisters who are to enter school within the coming year. The parents are then notified by a letter from the principal to bring their children to the

Mulberry Health Center for examination and are urged to see that the defects discovered on examination receive immediate attention. The names and addresses of the children are then turned over to the health center for follow-up to see that the children actually report for examination and also that the doctor's recommendations are carried out. The Department of Health plays an important rôle in the plan in providing physicians to assist in examinations, to vaccinate the children and to immunize them against scarlet fever and diphtheria.

A STUDY OF RESULTS

A careful study has been made of the results of the preschool drive and follow-up for the period from March 1, 1924, to September 1, 1924, with an additional check up of children entering school in February, 1925. During the period from March to September, 1924, 1,359 children, for the most part between 4 and 6 years of age, were entered for examination and nursing follow-up. The degree to which the schools of the district have coöperated in this work is indicated by the fact that 641 of the children, or 47.2 per cent, were referred directly by the schools of the area. The remainder, 718, or 52.7 per cent, were already known to the center and were recruited by notices sent from the center to the home. Of the 1,359 children registered, 764, or 56 per cent, reported to the center for examination.

Despite the fact that the follow-up period ranged from three to six months, 48 per cent of the recommendations were actually carried out or under treatment at the close of the study. Dental care, which was recommended as a routine for all children, had been completed for 47 per cent of the children. Of the 134 children for whom tonsillectomies were advised 43 per cent actually underwent operation.

ENTERING SCHOOL FREE FROM DEFECTS

While we are still far from our goal of entering all children in school free from defects, substantial progress has been made. More than half of the children in this district during the past school year have been examined prior to admission and more than a fourth (28 per cent) had some or all defects corrected before school entrance. Since 206 of the children entering school in February had not been enrolled in the spring drive, it is not surprising that a larger proportion of this group entered school with defects uncorrected than those entering school in September. A large number of these children (122) were examined after September and many of them will have had their defects corrected before the close of the school year. Table I gives a brief summary of the condition of the children entering school during the September and February terms.

THE ROLE OF THE DEPARTMENT OF HEALTH

The Department of Health of New York City so far as its resources will permit is developing a health service for children of preschool age. Of the 764 examinations made during the "spring drive" 270, or 35.3 per cent, were provided by physicians of the Department of Health, who also vaccinated 327 children and immunized 114 against scarlet fever and diphtheria. In addition to this a large number (26) received partial immunization against scarlet fever and diphtheria, having received at least two injections of toxin-antitoxin and scarlet fever serum.

TABLE I

NUMBER AND PROPORTION OF ALL SCHOOL ENTRANTS WHO WERE EXAMINED AND HAD DEFECTS CORRECTED

	Entering School September, 1924		Entering School February, 1925		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Total entrants	681	100	297	100	978	100
Examined	315	46.3	195	65.6	510	52.1
No defects corrected	121	17.8	125	42.1	246	25.1
Some defects corrected	46	6.8	23	7.7	69	7.1
All defects corrected	148	21.7	47	15.8	195	19.9
Not examined, no defects corrected	366	53.7	102	34.3	468	47.8

THE COST OF THE SERVICE

The question of cost of various types of health service is being raised most persistently at the present time. We have been conscious from the beginning that unless the preschool service can be rendered at a fairly moderate cost per child, the prospect of the community continuing such a service after the demonstration period is over is indeed very remote. A complete record was kept of the actual time of the nurses in the field, the amount spent for medical services, the cost of the necessary records and clerical help and the proportion of the general overhead for supervision which was chargeable to this single effort. We are presenting the results of this analysis somewhat in detail for we believe that similar organizations will be interested in going into this phase of the problem quite fully.

In Table II is given the complete cost of the entire drive distributed under three main headings. It was on the basis of the analysis of cost by persons and by nursing visits that we were able to determine the relative cost of different groups of children , who had received varying amounts of care.

The average cost per child, regardless of the amount of service received, therefore, was approximately $2.22. The cost of the registration alone was approximately 13 cents per child. Into this cost has entered the expense of the registration of children in public schools, the printing and filling out of various record cards and the cost of supervision which was necessary to carry through the first step of the drive. The cost per nursing visit is estimated at approximately 68 cents. This cost is somewhat below the average cost of a nursing visit prevailing in most nursing services. One reason for this discrepancy is that in overhead costs no charge has been made for such items as rent, light and heat. We have, however, charged against nursing service the amount of supervision necessary while the drive was in progress. The cost of $1.62 for a single examination, too, is relatively low, largely because of the large number of children who were examined within a given period of time. We charged ourselves, however, with the full time of every physician, even where the service was donated, as in the case of the Department of Health.

In Table III a comparison is made of the per capita costs of two groups of children. The first group were those registered in the drive but not examined and followed up, in which case the total cost of $685.04 represents largely lost effort, since the children did not report for examination and, therefore, received no benefit from the drive. The per capita cost for this group was $1.15. The gross per capita cost of the other group was $3.15, which is subdivided into registration, nursing and examination costs.

The children examined may be divided into four groups with respect to defects corrected and the costs of serving each

TABLE II

GROSS PER UNIT COSTS OF PRESCHOOL DRIVE CONDUCTED BY MULBERRY HEALTH CENTER, MARCH TO SEPTEMBER, 1924

	Costs	Units	Cost per Unit
Total	$3,093.51	1,359 (ind.)	$2.217
Registration	171.85	1,359 (ind.)	.126
Nursing	1,682.09	2,455 (visits)	.685
Examination	1,239.57	764 (ind.)	1.622

TABLE III

PER CAPITA COST OF TWO GROUPS OF CHILDREN COMPARED

	Cost of Service for 595 Children Registered but Not Examined				Cost of Service for 764 Children Registered, Examined and Followed Up	
		Number Children	Cost per Cap.	Total	Number Children	Total
Total	$685.04	595	$1.150	$2,408.47	764	$3.152
Registration	75.29	595	.126	96.56	764	.126
Nursing	609.75	595	1.024	1,072.34	764	1.402
Examination	(Not ex.)	...	....	1,239.57	764	1.622

group compared. The first group (52 children) had all defects corrected without any follow-up visits. The second group (244 children) had all defects corrected with an average of 2.3 nursing visits. The third group (108) had some defects corrected with an average of 2.4 visits. The fourth group, in spite of an average of 2.1 nursing visits, reported no defects corrected.

In the following table the per capita cost of the preschool service for each of these groups has been calculated. The per capita cost ($1.75) for the group which had all defects corrected without follow-up is the lowest. The group reporting all defects corrected with the assistance of the field nurses was $3.33, while the per capita cost for the group reporting no defects corrected was nearly as high ($3.16). These cold figures are eloquent testimony of the saving in the cost of health service when parents really appreciate the value of the service they are receiving and give intelligent coöperation.

The final stage of the preschool program is to transfer to the schools of the area the complete medical record of all children entering school who have been enrolled in the preschool drive. Thus is transmitted not only a complete record of the last examination and follow-up, but for children previously known to the center a complete record year by year from the prenatal state to school entrance. This record will prove invaluable to the principals, school doctors and nurses who will be responsible for protecting the children's health during the school career.

TABLE IV

DETAIL STATEMENT OF COST OF FOUR GROUPS OF CHILDREN EXAMINED AND RECEIVING NURSING FOLLOW-UP

GROUP I

52 children who had all defects corrected without nursing follow-up

Costs	Total Costs	Number Children	Costs per Cap.
Total	$9,094	52	$1.749
Registration	657	52	.126
Nursing	None	..	....
Examination	8,437	52	1.622

GROUP II

244 children followed up and who reported all defects corrected

Costs	Total Costs	Number Children	Costs per Cap.
Total	$813.18	244	$3.333
Registration	30.84	244	.126
Nursing	386.45	244	1.584
Examination	395.18	244	1.622

GROUP III

108 children who were followed up and reported some defects corrected

Costs	Total Costs	Number Children	Costs per Cap.
Total	$364.87	108	$3.378
Registration	13.65	108	.126
Nursing	176.10	108	1.630
Examination	175.12	108	1.622

GROUP IV

300 children who were followed up but reported no defects corrected

Costs	Total Costs	Number Children	Costs per Cap.
Total	$1,139.48	360	$3.165
Registration	45.50	360	.126
Nursing	509.79	360	1.415
Examination	$84.19	360	1.622

SUMMARY

The Mulberry Health Center has, we believe, developed an economic and efficient community program for reaching the preschool child which will appeal to other communities facing the same problem.

The conduct of this Preschool Drive has demonstrated that the health center, a community health venture, may very readily become the agency to enlist the interest, secure the coöperation and coordinate the efforts of all organizations working in the district for the advancement of the welfare of the preschool child.

Finally, while the estimates of the cost set forth above are not final, they indicate quite clearly what other communities may reasonably expect to spend in developing and putting into operation an effective preschool program.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

EDITORIAL COMMITTEE

MAZÝCK P. RAVENEL, *Chairman* HOMER N. CALVER, *Managing Editor*

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THE FIFTY-FOURTH ANNUAL MEETING

IN THIS ISSUE is printed the preliminary program for the St. Louis meeting. The programs of the sessions have been practically completed and the Local Committee has made extensive arrangements for the entertainment of the guests, particularly the ladies. The attractions of St. Louis are numerous and the program is unusually good. Members of the Association will enjoy the customary reduced fare and full information regarding railroads and hotels was given in the August issue.

The St. Louis committee has set out to excel last year's meeting and that meeting, at Detroit, was by general acclaim the best in the history of the Association. A large attendance is therefore expected and those planning to attend who are not members are urged to apply for membership in advance so that they may take advantage of the reduced fare.

THE CLERGY AND PUBLIC HEALTH

AMONG THE professions outside of public health none affords greater opportunities to advance the cause of public health than the ministry, with the possible exception of school teaching. Clergymen daily come into contact with cases of distress, crime, delinquency, mental and religious unrest which have their cause and motive power in physical conditions and surroundings. With few exceptions the clergy have remained blind to their opportunity and impervious to suggestions to assist in remedying these conditions. Will not some Moses arise to lead them into the Promised Land? Herbert Spencer revolutionized political science by the introduction of the biological viewpoint, and even though we must admit that in too many cases the political scientists lack foundational preparation for the efficient use of scientific facts, the result on the whole has been good. If the clergy could be induced to recognize man as a biological product, subject to biological laws, and to realize that the part of man which is intellectual and spiritual has a physical basis, its work would gain in efficiency.

It is refreshing to see that the Royal Institute of Public Health at its meeting in May had an address by the Bishop of Birmingham, who is one of those outstanding clergymen who have recognized that the preacher should be more than a

theologian. He correctly holds that the physical conditions in which one lives profoundly affect one's ethical aspirations; that poor diet and disease injure the spirit no less than the body; and that one's ideals, and the religious view of life which is dependent on these ideals and often springs from them, are in large part the products of environment. Living conditions which make the decencies and sanctities of life impossible, destroy morale and aspiration after higher things. Moral degradation follows physical squalor. Opportunity is necessary for the development of the religious sense, but it becomes atrophied in sordid surroundings, and successful religious work is almost impossible under such conditions.

Religious progress depends largely on improvement in social conditions; our complex civilization is constantly making greater demands, and its machinery must continuously improve if the spiritual foundation is to gain strength.

Our only regret is that the sermon of the Bishop of Birmingham was given to an audience made up largely of physicians and public health workers instead of a gathering of clergymen or theological students who needed the information contained in it, and needed even more the point of view. It has always seemed to us that the clergy has misread or misunderstood St. James, who we believe gave a clear call to those whose religion tends to adhere too exclusively to the spiritual: "If a brother or sister be naked and in lack of daily food, and one of you say unto them, Go in peace, be ye warmed and filled; and yet give them not those things needful to the body; what doth it profit?"

FEDERAL TAXES ON PROFESSIONAL EFFICIENCY

IF A MERCHANT travels to buy goods or to learn the latest methods of merchandising, he can deduct the cost as a business expense before he computes his federal income tax. But if a physician travels to acquire knowledge and skill and to learn new methods, he cannot deduct the cost; he pays a tax on his ambition and enterprise. The physician who attends a meeting of the American Public Health Association or any other scientific or professional body, or who takes a post-graduate course in public health or in any branch of his art, must pay a tax on the cost of doing so; that is—and it amounts to the same thing—he is not allowed to deduct the cost as a professional expense in computing his net taxable income.

The Revenue Acts of 1921 and 1924 permit the deduction of the expense of travel in the conduct of business. The Commissioner of Internal Revenue has ruled, however, that attendance at scientific meetings and post-graduate study is not a part of a physician's business. We have not found any regulation of the Treasury Department applying this rule to any other class of taxpayers. If the same rule is not being applied to other professions, we may look for its extension to them as soon as the question is raised. It seems advisable, therefore, to take advantage of the pending revision of the Revenue Act of 1924 to ask that it be phrased so as to insure to all scientific and professional workers the same privileges with respect to the computation of income taxes that are now extended to manufacturers and merchants.

Protests against the taxation of scientific and professional workers on the cost of attending scientific and professional meetings in the discharge of their scientific and professional duties should be addressed at once to Honorable William R. Green, Chairman, Committee on Ways and Means, House of Representatives, Washington, D. C.; and Honorable Andrew Mellon, Secretary of the Treasury, Washington, D. C.

FASHION AND DISEASE

ALL TEACHERS of hygiene give a certain number of lectures on dress and the materials of which clothing is made; a discussion of colors and their relation to heat absorption, materials, and their properties regarding both moisture and air retention. Dress reform has been advocated and practiced in various parts of the world, but attention does not seem to have been generally drawn to certain diseases clearly caused by fashions and dress.

Everyone knows that in the later years of the last century, chlorosis of young girls was excessively common, and Blaud's pills held an important place in the physician's armamentarium. Chlorosis has almost completely disappeared, so much so that many younger physicians are inclined to believe that it did not occur as frequently as the statements of the older physicians would have us believe. It is perhaps true that diagnosis by careful examination of the blood is more often and better carried out at the present time than it was 30 or 40 years ago, but there is good evidence that the blood was examined at that time and that the so-called "green sickness" was excessively common. Girls in all walks of life suffered. Those who exercised and those who worked for their living suffered equally with the pets of fate and of society, who could afford leisure and the best of food.

Those who are inclined to doubt the existence of chlorosis, may well be asked to explain why the disease was found in girls and not in boys, and why the older physicians should have made this mistake in diagnosis. The main exciting cause of the disease was almost certainly tight lacing and the wearing of tight corsets, and since these articles of torture have been abandoned, the disease has practically disappeared. The charge against corsets was first made in 1895 and has recently been supported by the observation of physicians in various parts of the world.

A new disease seems to have taken the place of chlorosis. A chronic indurative erythema of the legs of girls and young women has now become quite common in certain parts of Europe, and a number of cases have been demonstrated before the Royal Society of Medicine in England. The disease produces thickening of the skin and subcutaneous tissues, and spreads from the malleolus upward. The affected area is red or cyanotic, does not pit on pressure, and the pallor produced by pressure disappears at once. There is a feeling of cold, pain, pressure, parasthesia or a sense of weight. Both legs are affected as a rule, and the condition is seen mostly between the ages of 14 and 20 years. It is most troublesome in the cold season. There seems to be a condition of persistent local atony of the capillaries.

It has been suggested that the cause of the disease is the lack of protection of the lower legs, which is now so common, there being no skirts to cover them and thin silk stockings being often the only covering. While this has not been definitely proved to be the cause, it is certain that this particular condition has been observed only since short dresses and silk stockings became popular. One may well ask why the disease is not even more common. The answer, according to those who have studied it most, is that the exciting causes are efficient only when there is some constitutional defect in the capillary circulation of the skin and subcutaneous tissues, which may be allied to the constitutional condition which leads to the true erythema induratum of Bazin.

The most deplorable feature of ailments due to the decrees of fashion is that no amount of teaching or argument will have the slightest effect in stopping them. On the other hand, fashions are fickle and few of them remain in vogue long enough to do any very great amount of damage.

PUBLIC HEALTH ADMINISTRATION WITHOUT MEDICAL INSPECTORS

The article* in the March, 1925, issue of the JOURNAL by the Health Officer of Minneapolis has aroused considerable comment. The subject is of such concern to public health workers generally, and to administrators particularly, that it seems desirable to publish in full the following communication:

TO THE EDITOR:

Dr. Harrington's article does not prove that medical inspectors are not necessary and practical, but his article does furnish excellent proof that part-time inspectors are unsatisfactory and that a health department should have on its staff thoroughly trained physicians working full time.

I do not believe an article could have been written better with the object in view of pleasing those individuals who are opposed to spending money on public health. They frequently ask "why have any health department at all when the family physician can do all that is necessary to control communicable diseases?" Why not go a step further and state that a health department could function more efficiently if there were no physicians connected with it in any way, even as commissioner? Why not just have a business manager or a politician? However, when one considers certain of the functions of a health department it is incomprehensible to believe that it can be managed efficiently without specially trained physicians.

Dr. Harrington admits "the services of physicians are necessary." The employment of part-time physicians by health departments is open to the same objection as the employment of a part-time health officer. No matter how conscientious a physician is, if he be in private practice and trying to do public health work at the same time, it is obvious that the private practice must receive first consideration both in regard to time and energy. Dr. Harrington substantiates this statement when he speaks of his medical inspectors calling at 10:30 P.M. If they were working full-time the calls would be made during the daytime as they should be. One reason, among many, is that the diagnosis of communicable diseases with skin manifestations is not satisfactory by artificial light.

Dr. Harrington speaks of "a tendency on the part of the medical inspector to agree more or less with the tentative diagnosis of the attending physician." This shows either a lack of full confidence on the part of the health department physician in his diagnostic ability or else a moral turpitude towards the patient and community. For, if a disease is diagnosed as one of the quarantinable group and is really not, an injustice is done the patient and his family by subjecting them to the inconvenience of a quarantine, and should the reverse occur it is an injustice to the community not to exercise proper quarantine measures but allow a disease to spread. Moreover, the patient is entitled to a correct diagnosis from a therapeutic standpoint. A health department diagnostician represents the community first, with due regard to the opinion of the family physician, but he must have enough courage to differ from the family physician if the facts warrant.

Dr. Harrington states "rarely is the physician at the time of employment by the department of health superior to his conferees in the community." Employment of physicians for diagnostic work who are not superior shows a weakness somewhere; either the executive head of the department shows lack of discretion in his selection or else the pay is too inadequate to attract physicians of sufficient training and mature judgment. A physician to be placed on a diagnostic staff of a health department should have had enough training and experience to make him an expert diagnostician of communicable diseases, or else after employment should work with one of the experienced physicians until he has had sufficient training.

There is no class of diseases, from the standpoint of the patient's welfare in regard to therapeutics and for the protection of the public, in which an accurate diagnosis is so desirable as in the communicable diseases. The family physician is frequently inexperienced in this class of diseases. Training in contagious diseases in the majority of medical schools is inadequate. Many physicians see rather few cases of even the more common types. Certain of the diseases occur infrequently, and in any type of disease there are a fair number of atypical cases that may puzzle even an experienced diagnostician, and as these less common cases and atypical cases are as contagious as any other type it is only fair to the community that they be carefully diagnosed and properly isolated.

* Harrington, F. E. *A. J. P. H.*, March, 1924, p. 232.

Every health department worthy of the name maintains a laboratory to assist in the diagnosis of certain of the contagious diseases; so why should not the department extend what aid it can to the general practitioner in the diagnosis of those communicable diseases in which laboratory aid is lacking. The public demands and is entitled to as much accuracy in these diagnoses as is possible to obtain. The efficiency of control measures is directly dependent on the avoidance of delay in diagnosis.

In contrast to Dr. Harrington's attitude, we believe in encouraging physicians to report cases or suspected cases by telephone so that there may be less delay in establishing proper quarantine. Many families cannot afford to pay for consultation by a specialist who is in private practice. In the majority of diseases an incorrect diagnosis would affect the patient or the patient's family only, but an incorrect diagnosis in one of the communicable diseases may affect the whole community.

Health department physicians also have the duty of vaccinating contacts in cases of smallpox. If this vaccination be turned over to the family physician as a routine, many people will claim that it is graft to make them pay the physician and, of course, as is well known, in certain states the law directs that contacts must be vaccinated by the health officer at public expense. Contrary to Dr. Harrington's statement: "the entire responsibility is lifted from the attending physician and placed upon the shoulders of the employed medical inspector who rarely takes time to observe these cases beyond the initial visit," it has been our experience that the physician is more careful if he realizes that his diagnosis may be checked by another physician who is a specialist. If the medical inspector does not take time to follow the case beyond the initial visit and more visits are desirable, that would show inefficiency and carelessness on his part, and poor administrative methods on the part of the health commissioner in allowing this carelessness. As it should be carried out and undoubtedly is in most departments (and certainly is where the physicians are employed full time), the attending physician makes his diagnosis, establishes as much isolation as is within his power, and institutes proper therapeutic measures. In cases of doubt concerning the diagnosis, the health department is notified and in a short time their diagnostician sees the case and confers with the attending physician as to the diagnosis and, if desirable, concerning the therapeutics.

Dr. Harrington refers to the percentage which had been vaccinated and yet contracted smallpox, as shown by the statistics for different years, whether medical inspectors or the family physician diagnosed the cases. In my estimation, these figures mean nothing. It is well recognized that vaccination performed a number of years previous to exposure does not always protect against smallpox. A physician who is very much influenced by a history of vaccination, or even the presence of a satisfactory scar, especially if this scar is more than a few years old, is not a safe one to diagnose cases of suspected smallpox.

In determining whether patients recovering from certain diseases, such as scarlet fever, are safe for release, the family physician can easily be misled because it takes considerable experience to decide when many of these are really safe. The family physician is as a rule discharged at the time of recovery from acute symptoms as a matter of expense, so that he is not always familiar with the late manifestations and cannot thus exercise the best judgment as to when it is safe to release the patient. It is obvious that the minimum period of quarantine will not be sufficient for all patients to recover to such an extent that they will be free from infection.

The health department must have competent diagnosticians to check up on the diagnosis of cases reported by public health and school nurses, chiropractors, Christian Science practitioners and others.

The Los Angeles County Health Department serves a population of over 500,000, including twenty-one incorporated cities which are under contract in addition to all the rural territory. The communicable disease control is under full-time physicians who are selected first by Civil Service and then by the County Health Officer, Dr. J. L. Pomeroy, after they have demonstrated their ability in actual practice. There are eight physicians in this work at present. In addition to these there are two physicians who see all cases in consultation with them in which there is any doubt or dispute about the diagnosis. These same two physicians also see all the cases of the less frequent diseases, such as leprosy, epidemic encephalitis, typhus fever, etc.

The full-time physician has his heart and soul in the work and naturally takes great interest in it and feels more responsibility towards the public than could any physician in private practice who has a multitude of different classes of diseases to handle. The full-

time physician consults with and demonstrates to the family physician many things in his line, just as any other specialist can. For example, the family physician often hesitates to use the Schick test and active diphtheria immunization until he sees a demonstration.

Dr. Harrington mentions hospitalization of patients. By the coöperation of which I speak, hospitalization can often be avoided and the patient kept at home under the care of the family physician.

Upon request of the family physician, our diagnosticians make blood cultures in cases of suspected typhoid, lumbar punctures, etc., where the family physician has not the equipment or does not feel he is familiar enough with the technique. The health department physician can naturally be in closer touch with the laboratory. Then, too, he has the better opportunity to get personally acquainted with the family physician and the public and so get their confidence and good will. In this way better coöperation can be obtained and many of the activities of the department, such as immunization, etc., and reasons for each phase of the procedure in quarantine, etc., can be explained.

It is highly desirable, yes, even imperative, to have properly trained full-time physicians in a health department. Otherwise, as far as the communicable diseases are concerned, the majority of the responsibility in their control must fall not only on the family physician but on non-medical practitioners, such as chiropractors, Christian Science practitioners and others.

J. W. ROBINSON, M.D.,
Diagnostician.

Los Angeles County Health Department,
Los Angeles, Calif.
May 27, 1925.

LIST OF MEMBERS

Proposed for election to the A.P.H.A., July 1 to July 31, inclusive.

Elizabeth B. Ball, M.D., Springfield, Ill., State Pediatrician, Illinois Department of Public Health.
Irving Sydnor Barksdale, M.D., Grenville, S. C., Commissioner of Health.
George Bevier, A.B., M.D., Paris, France, with the International Health Board of the Rockefeller Foundation, Paris Office.
William Leslie Bradford, A.B., M.D., Sedalia, Mo., County Health Officer.
Wyatt Thomas Burkett, M.D., Tuscumbia, Ala., County Health Officer, Field Agent, U. S. Public Health Service.
Robert C. Cook, M.D., Springfield, Ill., Assistant Superintendent on Child Hygiene, Illinois State Department of Public Health.
Robert Cramer, M.E., Milwaukee, Wis., Consulting Engineer, Specializing in Municipal Water, Pumping, Power and Sewerage Work, Member of Sewerage Commission of City of Milwaukee.
Mariano Martin y Diaz, Havana, Cuba, Secretaria de Sanidad y Beneficencia, Negociado de Demografia, Official del Servicio de Demografia.
Nan L. Dorsey, R.N., Pittsburgh, Pa., General Director of the Pittsburgh Public Health Nursing Association.
Katherine Earley, Meriden, Conn., School Nursing, Meriden, Conn.
Esther R. Entriken, R.N., Drexel Hill, Pa., Nursing Field Representative, American National Red Cross, Washington, D. C.
Josephine G. Fitzgerald, R.N., Meriden, Conn., School Nurse.
Charles Conrad Freed, M.D., A.B., Dillon, S. C., Health Officer of Dillon County.
J. S. Fulton, M.D., Emporia, Kans., Field Agent, U. S. Public Health Service and County Health Officer.
Laura Adelaide Gamble, R.N., Olean, N. Y., Director of Bureau of Public Health Nursing, Cattaraugus County Health Demonstration.
Clifford L. Hooper, M.D., Miller, Neb., General Practice. (Assoc.)
Paul B. Jones, D.D.S., Pontiac, Mich., Director of Dental Department, Pontiac City Schools.
Robert P. Knapp, M.D., South Manchester, Conn., Medical Director, Cheney Bros.
Carl Clarence Larson, M.S., Springfield, Ill., Chemist, Division of Sanitary Engineering.
A. J. Markley, M.D., Belvidere, Ill., District Health Superintendent.
Minnie E. McAvoy, Kansas City, Mo., Communicable Disease Nurse in the Health Department.
Clarence D. McKinney, M.D., Paxton, Ill., District Health Superintendent.
Agnes Meagher, R.N., Baltimore, Md., Instructor Hygiene and Public Health, National Catholic Service School, Washington, D. C.
Clarence Francis Moriarty, M.D., C.M., Montgomery, Ala., Special Member International Health Board.
C. S. Nelson, M.D., Springfield, Ill., District Health Superintendent.
Voyle A. Paul, M.D., Stamford, Conn., Employed by Yale and Towne Mfg. Co.
Mario A. Pernambuco, M.D., Sao Paulo, Brazil, S. A., Director, County Health Service. (Assoc.)
Weston A. Price, M.S., D.D.S., Cleveland, Ohio. (Assoc.)
Jane H. Rider, B.S., R.N., Tucson, Arizona, Director, State Laboratory.
Frances Catherine Ridgway, B.A., Savannah, Ga., Assistant Bacteriologist, Municipal Laboratory.
John Ellsworth Rockhold, C.E., Los Angeles, Calif., Acting as County Sanitary Engineer in coöperation with County Health Officer.
Professor Angel H. Roffo, Buenos Aires, S. A. (Assoc.)
Karol Ryder, M.D., Bendzin, Poland, Europe, District Health Commissioner. (Assoc.)
Rafael Santamarina, M.D., Mexico City, Mexico, Chief of the Department of Psychology and Hygiene, Department of Public Education.
Paul A. Slater, M.D., Hindsboro, Ill., District Health Superintendent.
E. P. Sloan, M.D., Bloomington, Ill., Member Advisory Board, Illinois Department of Health.
Harry J. Smeikal, M.D., Chicago, Ill., Medical Health Inspector, Supervisor Venereal Clinics.
William H. Smith, M.D., Benton, Ill., District Superintendent of Public Health.
Hyman I. Spector, B.S., M.D., St. Louis, Mo., Tuberculosis Controller City of St. Louis.
Albert LaFayette Spence, M.D., Kennett, Mo., Deputy State Health Commissioner.
Elsbeth H. Vaughan, R.N., St. Louis, Mo., Assistant Director of Nursing Service, Mid-Western Branch American National Red Cross.
Albert K. Warren, Los Angeles, Calif., Chief Engineer, Los Angeles County Sanitation Districts.

ASSOCIATION NEWS

NEW FIELD DIRECTOR

On September 8, W. F. Walker, Dr.P.H., becomes the Field Director of the Committee on Municipal Health Department Practice. Dr. Walker's training and experience fit him unusually well for this position. Born in 1889, he was graduated from the University of Michigan in 1914, receiving the degree of Dr.P.H. from that University in 1922. Except for a short time of service in the Sanitary Corps of the U. S. Army, Dr. Walker was associated with the Detroit Department of Health from January, 1914, to November, 1923. He was Deputy Commissioner of Health from 1918 to 1922, when he was made superintendent of the Municipal Tuberculosis Sanatorium.

Dr. Walker left the Detroit Health Department to become Research Associate in the American Child Health Association. In this work he was intimately associated with the survey of smaller cities made by that association and he is already known to many health officers in connection with the follow-up service extended by the A.C.H.A.

W. F. WALKER, DR.P.H.

The appointment of Dr. Walker to the staff of the American Public Health Association assures the continuance of coöperation between the two associations most active in the development of municipal health department practice. His recent intensive experience in this field and splendid training in the Detroit Health Department fit him admirably for his new position. The American Public Health Association is fortunate in securing his services for its members.

STANDARD METHODS—SIXTH EDITION

In 1895—thirty years ago—the *Journal of the American Public Health Association* published the proceedings of a convention of bacteriologists, specially assembled to discuss methods of water analysis. This was the beginning of the publication now known throughout the world as "Standard Methods for the Examination of Water and Sewage." It was not until 10 years later that this volume was published separately, the first edition appearing in 1905. With the enlargement of knowledge and the improvement of technique, revisions were made from time to time and subsequent editions were published in 1912, 1917, 1920 and 1923 by the American Public Health Association.

A year or so ago the American Water Works Association requested a partnership in this volume and the Executive Board of the A.P.H.A. granted this request. The new Sixth Edition has therefore been prepared by committees representing both associations. The joint promulgation of standard methods should facilitate coöperation between sanitarians and water works operators. The volume remains under the able editorship of Professor John F. Norton and is published under the direction of the Executive Secretary of the A.P.H.A.

The microscopical and bacteriological sections have been revised for the Sixth Edition which is now ready for distribution.

ANNUAL MEETING

ST. LOUIS ATTRACTIONS

FOREST PARK

All cities have parks, but only St. Louis has Forest Park, which is another way of saying that Forest Park is remarkable for its beauty, its extent, and the variety of its interests.

MUNICIPAL COURTS BUILDING—HEADQUARTERS OF HEALTH DEPARTMENT

When Missouri was part of a Spanish province, two gentlemen named Gratiot and Papin received a grant of land from the Spanish Governor-General. This was in 1796 and 1798. It was not a hundred years later that 1,372 acres of this land were purchased by St. Louis, and in June, 1876, this territory was formally dedicated as Forest Park.

From April 30 to December 1, 1904, the Louisiana Purchase Exposition was held here, and afterward, during the restoration period, much was done to beautify the park by making new drives, building new bridges, seeding and planting, and forming lakes, until the present picturesque landscape was evolved. The Art Museum, erected for the Fair, was later enlarged and became one of the most beautiful in the country. During the last 15 years the city has grown till it quite surrounds the park.

The Zoölogical Gardens, also located in Forest Park, are internationally famous and well worth visiting. Seventy-seven acres were set aside in 1913 to increase the capacity of the gardens of 50 years ago. All the present buildings have been erected within the last six years. George Dieckman, president of the Zoölogical Society, and recently elected president of the National Zoölogical Society, is responsible in great measure for its wonderful growth and the excellence of its arrangement. The Bird Cage is reputed to be the largest in the world. It contains more than 700 birds of 132 species. The barless bear pits have excited the interest of zoölogists from many other states. They are reproductions of limestone bluffs along the Mississippi River. The bears are confined on three sides by this rocky formation, and on the fourth side is a wide moat separating them from the visitors. In Forest Park is also located the open air Municipal Theater, where a program of light and grand opera is given throughout the summer.

CITY HOSPITAL

The City Hospital was founded in 1853, and now has a capacity of 900 beds and covers two square blocks. It is estimated that from 90 to 95 per cent of the city's emergency cases are

OLD COURTHOUSE

taken to the City Hospital before being transferred to specialized municipal institutions for treatment. The hospital includes a social service department, an occupational therapy department, and a training school for nurses. The Board of Education furnishes three school teachers who conduct classes in fully equipped schoolrooms. These teachers also give bedside instruction to children of school age.

KOCH HOSPITAL

Tuberculous patients are cared for at the Koch Hospital. Founded in 1910, this is the only municipal institution in the United States which has no wards. Each patient has a separate room. The heliotherapy treatment is used extensively. Koch averages 300 patients, segregated according to sex, age, and color. When completed, the Koch Hospital will cover 170 acres set aside for this purpose.

SANITARIUM

The largest city institution is the Sanitarium. Formerly called the "Insane Hospital," it is now the "Hospital for the Mentally Ill." The hydrotherapy system has been used here with beneficent results. Physical training and physical therapy are used in the treatment for the restoration of the insane. More than 900 of the 2,700 patients are now engaged in useful work. A school is provided for children.

BELLEFONTAINE FARM

The home for delinquent boys, Bellefontaine Road at the Missouri River, is at a spot rich in tradition. It is close to the confluence of the Mississippi and Missouri Rivers, at the location of the early nineteenth century Fort Florissant, built to protect the villages of Florissant and Louis against the Indians. The more than 200 boys who live on this farm are divided into large families, in ten cottages. Each cottage is in charge of a married couple. The boys take full care of the cattle on the farm. Three hours each day are spent in school, and plenty of time is allowed for play.

WATER WORKS

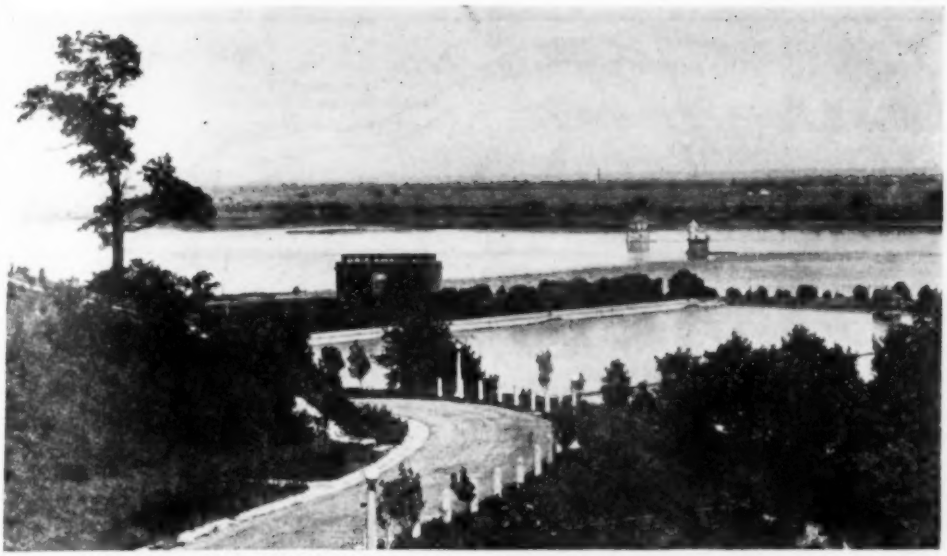
The Chain of Rocks Water Works is located in a beautiful park, with intake towers on both the Mississippi and Missouri Rivers. The plant began operation in 1892. Edward E. Wall, the present Director of Public Utilities, built the filtration plant in 1915. As the maximum capacity—120,000,000 gallons per 24 hours—has almost been reached, it became necessary to build a new plant, which is under construction at Howard's Bend on the Missouri River. Here the river was a mile wide, but there were three channels caused by two islands. In order to swerve the flow into one channel dikes and revetment had to be built. Willows are woven like wicker and sunk where the pile dike is to be built. Through this screen piles are driven, and three of the pile posts are then "clumped" together at the top with steel cable. Logs are then placed horizontally against the "clumped" pile posts and the structure thus formed resembles a net, which assimilates driftwood and floating objects, and soon becomes a natural dam. When this work is completed the river at this point will be about one-third its original width. The new plant, modeled after Chain Rocks plant, will have a capacity of 200,000,000 gallons in 24 hours.

TRIPS IN AND AROUND ST. LOUIS

Arrangements for providing entertainment and instruction for the visiting members of the American Public Health Association during its Fifty-fourth Annual Meeting at St. Louis, October 19-22, 1925, have been practically completed by the Local Committee.

It has been thought best not to attempt to separate the trips around St. Louis into two classes, namely, scientific and sightseeing, but to list them as a whole, since many of them combine the two features.

At all times during the annual meeting automobiles will be available for individuals or small groups of members desiring to visit any



VIEW FROM CHAIN OF ROCKS PARK SHOWING COAGULANT HOUSE AND INTAKE TOWER

of the places of particular interest. Bulletins describing in some detail many of the places listed here may be had at the Registration Desk. Members wishing to take any of the special trips are requested to register one day ahead of the time scheduled for the trip.

SPECIAL TRIPS

Trips to places of special interest to a large number of the delegates have been arranged as follows:

1. Visit to the water Works Pumping Station and Chain of Rocks Filters, *Wednesday morning.*

2. Visit to the Robert Koch Hospital (tuberculosis), at Koch Station, St. Louis County, *Tuesday morning.*

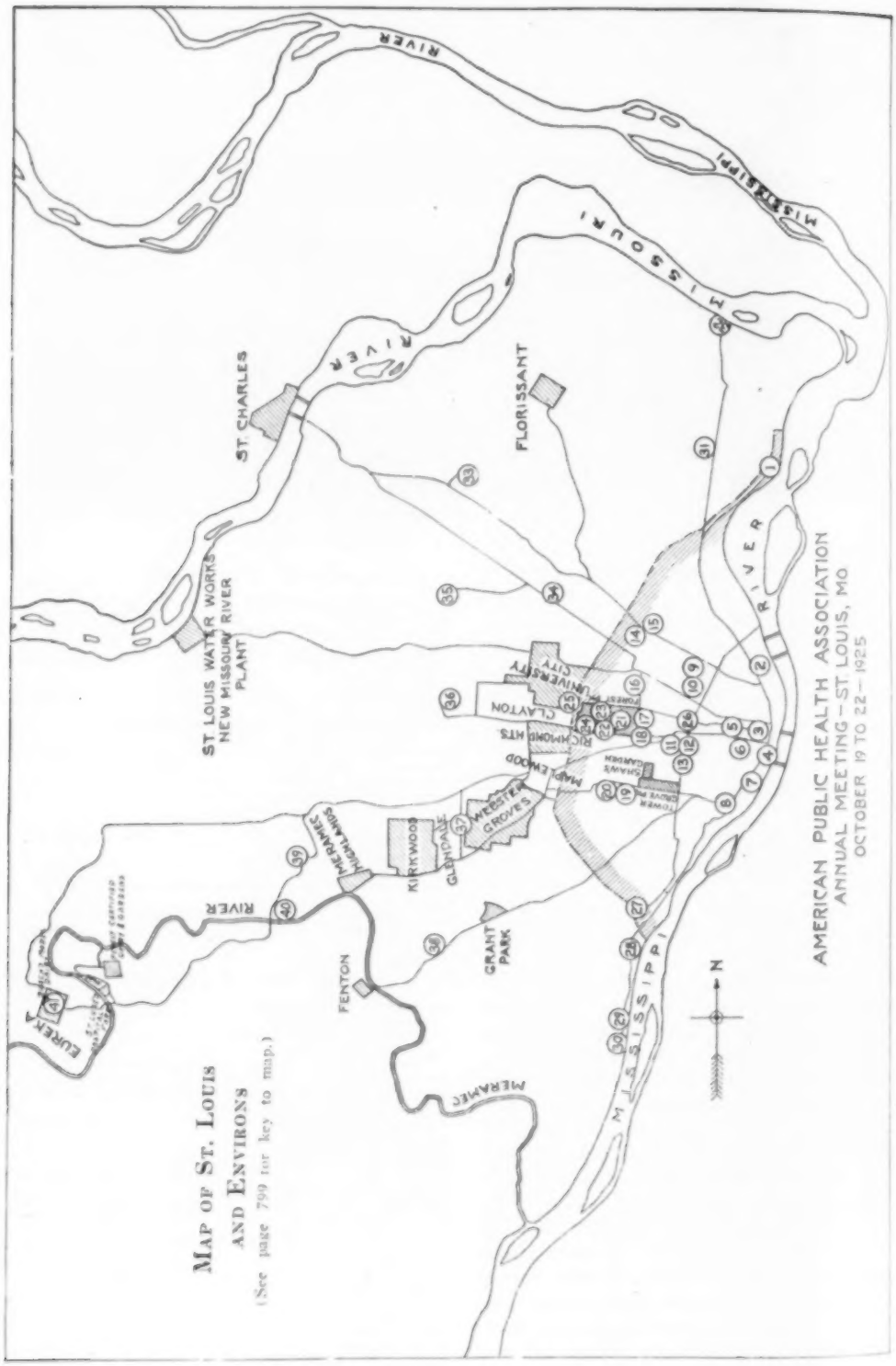
3. Members interested in mental hygiene are invited to be the guests of the City of St. Louis at luncheon at the St. Louis Training School (feebleminded), and to visit Bellefontaine Farm for delinquent boys, *Thursday afternoon.*

4. Automobile trips about the city for all delegates to Forest Park, the Art Museum, Jefferson Memorial, Shaw's Garden, Tower Grove Park and other points of interest, *Tuesday afternoon.*

The attractions of these and other places are described elsewhere. Trips to other places which some of the delegates will wish to visit will be arranged by the Local Committee upon request. A list of such places is given herewith, the location of many of them is indicated on the map on the next page.

PLACES OF INTEREST

Barnard Free Skin and Cancer Hospital and Dispensary.
Barnes Hospital.
St. Louis Children's Hospital.
Shriners' Hospital for Crippled Children.
Ridge Farm County Department for Convalescent Children.
Community Council Clearing House for Social Service.
St. Louis City Hospital,
  Bacteriological and Pathological Laboratory.
  X-Ray and Radium Department.
St. Louis Isolation Hospital.
Marine Hospital No. 18, U.S.M.H.S.
United States Veterans' Hospital.
Washington University Dispensary.
Central Institute for the Deaf.
Division of Hygiene, Board of Education Open Air School.
St. Louis City Infirmary.
St. Louis City Sanitarium.
St. Louis Tuberculosis Society, Night and Day Camp.
Missouri School for Blind.
Municipal Visiting Nurses, Municipal Courts Building. (Municipal Health Centers, Prenatal, Child Welfare and Chest Clinics.)
Psychiatric Clinic.
City of St. Louis Division of Health, Municipal Courts Building.
  Bacteriological Laboratory.
  Chemical Laboratory.
  Venereal Disease Clinic.
Park Division, Community Centers.
  Sherman Park, Easton and Kingshighway.
  Grand Avenue, Grand and Vista Avenues.
  Mullanphy, 11th and Mullanphy Streets.
  Public Comfort Stations.
Washington University.
St. Louis University.
Scullin Steel Company.
Illinois Steel Plant (24-hour nursing service).
Crunden-Martin Manufacturing Company.
Hamilton-Brown Shoe Company (Sunlight Shoe Factory).
Southwestern Bell Telephone Company.
  School of Instruction.
Emerson Electric Manufacturing Company.
Century Electric Company.
Medart Pulley Company.
Anheuser-Busch, Inc. (Beverages).
John T. Milliken & Company (Chemicals).
Mallinckrodt Chemical Works.
Monsanto Chemical Works.
Provident Chemical Works.


MISSISSIPPI RIVER
MISSOURI RIVER
ST CHARLES
FLORISSANT
ST LOUIS WATER WORKS
NEW MISSOURI RIVER
PLANT
UNIVERSITY CITY
CLAYTON
RICHMOND HTS
MAPLEWOOD
WEBSTER GROVES
KIRKWOOD
GLENDALE
MERAMEC HIGHLANDS
RIVER
FENTON
GRANT PARK
MERAMEC
EUREKA
MISSISSIPPI
RIVER
N
AMERICAN PUBLIC HEALTH ASSOCIATION
ANNUAL MEETING—ST LOUIS, MO
OCTOBER 19 TO 22—1925
MAP OF ST. LOUIS
AND ENVIRONS
(See page 799 for key to map.)

KEY TO MAP

1. Fibre Plant.
2. Mallinckrodt Chemical Works.
3. Statler Hotel.
4. John F. Milliken & Company (Chemicals).
5. Community Council—clearing for social service and health activities.
6. Municipal Courts Building.
7. Monsanto Chemical Works.
8. Anheuser-Busch, Inc.
9. Banner Creamery Co.
10. American Packing Co.
11. Independent Packing Company.
12. Pasteurized Milk Dairy Plant.
13. Tuberculosis Open Air School.
14. Porter Open Air School.
15. Chevrolet Motor Company.
16. Sherman Park.
17. St. Louis Children's Hospital.
    Barnes Hospital.
18. Shriners' Hospital for Crippled Children.
19. St. Louis City Sanitarium.
    St. Louis Isolation Hospital.
20. St. Louis City Infirmary.
21. Municipal Theater.
22. Zoo.
23. Jefferson Memorial.
24. Art Museum.
25. Washington University.
26. St. Louis University.
27. Provident Chemical Works.
28. Night and Day Camp.
29. United States Veterans' Hospital.
30. Robert Koch Hospital (tuberculosis).
31. St. Louis Training School for the Feebleminded.
32. Bellefontaine Farm for Delinquent Boys.
33. Lambert Aviation Field.
34. Normandy Golf Club.
35. Midland Valley Golf Club.
36. St. Louis Country Club Golf Links.
37. Algonquin Golf Club.
38. Sunset Inn Golf Course.
39. Cottage for Delinquent Girls.
40. Rubey Farm for Convalescent Children.
41. Certified Dairy.

INFORMATION FOR WOMEN

A room in the Hotel Statler has been set aside for the special use of visiting women. Information may be obtained here for shopping and other guidance, as well as emergency service.

The Town Club of St. Louis, 1120 Locust Street, extends the privileges and courtesies of the club, including the swimming pool, to the visiting women. A limited number of guest cards may be had each day, on application at the main Registration Desk.

POLAR BEAR PIT, ST. LOUIS ZOO

ENTERTAINMENT AT THE ANNUAL MEETING

From Monday morning until Thursday night something has been planned to engage the attention of every delegate. When there are no sessions to attract him, there will be trips of general and scientific interest. In providing entertainment the Local Committee has set out to rival Detroit.

ART HILL AND ART MUSEUM, FOREST PARK

ARRANGEMENTS FOR YOUR PLEASURE

Monday Evening: There will be a reception in the ball room of the Statler Hotel, immediately following the first general session. (Dancing and refreshments.)

Tuesday Afternoon: Automobile drive as mentioned under "Trips In and Around St. Louis." Director Geo. T. Moore invites members and delegates to visit Missouri Botanical Garden on this occasion.

Wednesday Noon: The Women's Committee will give a luncheon in honor of visiting women. Tickets will be provided for those who apply at the Registration Desk by Tuesday noon.

Thursday Night: Delegates are invited to attend the evening performance at the Orpheum. Tickets will be provided for those who apply at the Registration Desk not later than 5 P.M. Wednesday.

A REQUEST

It will be very helpful to the Local Committee if all delegates will, upon arrival, go at once to the Annual Meeting Registration Desk on the sixteenth floor of the Hotel Statler, and register or obtain tickets for whatever entertainment or special trips they expect to participate in.

PRELIMINARY PROGRAM FOR THE FIFTY-FOURTH ANNUAL MEETING *

THE OUTSTANDING features of the meeting this year will be the large number of general and joint sessions. Each section will have its own meetings as usual and there will be a number of luncheon and dinner meetings devoted to the consideration of particular topics or for special groups.†

All meetings will be held in the Hotel Statler. The sessions will begin on Monday morning, October 19, and extend through Thursday afternoon, October 22. Tuesday afternoon and Thursday evening have been set aside for entertainment.

The Program Committee has been unusually prompt this year in securing interesting papers and speakers. The preliminary program of the scientific sessions follows. The program of entertainment is given elsewhere in this issue.

GENERAL SESSIONS

First Session—Monday Afternoon

THE YEAR'S PROGRESS IN PUBLIC HEALTH

Tendencies in Public Health Administration. CHARLES V. CRASTER, M.D., D.P.H., *Chairman* Public Health Administration Section.

The Laboratory in Public Health Work. PROFESSOR S. C. PRESCOTT, *representing* Laboratory Section.

A Brief Review of Vital Statistics. EDGAR SYDENSTRICKER, *representing* Vital Statistics Section.

The Place of Sanitary Engineering in Public Health Activities. GEORGE W. FULLER, *representing* Sanitary Engineering Section.

Recent Developments in Industrial Hygiene. HENRY FIELD SMYTH, M.D., *Chairman* Industrial Hygiene Section.

The Year's Work in the Food and Drugs Field. F. C. BLANCK, PH.D., *Chairman* Food and Drugs Section.

Developments in Child Hygiene. CHARLES H. KEENE, M.D., *Chairman* Child Hygiene Section.

The Year's Progress in Health Education and Publicity. JAMES A. TOBEY, *Chairman* Health Education and Publicity Section.

Advancements in Public Health Nursing. ALTA E. DINES, *Chairman* Public Health Nursing Section.

ADDRESS

The Future of the Human Race—A Public Health Problem. CHARLES J. HASTINGS, M.D., Medical Officer of Health, Department of Public Health, Toronto, Canada.

Second Session—Monday Evening

Addresses of Welcome. HON. SAM A. BAKER, Governor of Missouri. HON. VICTOR J. MILLER, Mayor of St. Louis. EMMETT P. NORTH, M.D., President State Board of Health, St. Louis. MAX C. STARKLOFF, M.D., Health Commissioner of St. Louis, Chairman of Local Committee. E. E. WALL, Director of Public Utilities, St. Louis. HON. HERBERT S. HADLEY, LL.D., Chancellor of Washington University, St. Louis.

Association Business (Appointment of Committees).

Address. HENRY F. VAUGHAN, D.P.H., President American Public Health Association.

Following this session will be a reception with dancing.

Third Session—Tuesday Evening

DINNER CONFERENCE ON EDUCATION OF SANITARIANS

Committee on Standardization of Public Health Training

1. **The Need for Trained Personnel.**
Discussion. JOHN A. KINGSBURY, Secretary Milbank Memorial Fund, New York City.
2. **Wider Application of the New Jersey Plan for Licensing Health Officers.**
Discussion. W. A. EVANS, M.D., *Chicago Tribune*, Chicago, Ill.

* This program is subject to change. Consult the program at the meeting for time and place of all papers.

† The office of the Association will be glad to arrange and announce luncheons or dinners requested by other groups in attendance at the Annual Meeting.

Fourth Session—Wednesday Afternoon

A PUBLIC HEALTH FORUM

Chairman CHARLES F. WILINSKY, M.D., Secretary Forum Committee, American Public Health Association.

Questions submitted in advance:

1. What statistical evidence have we of the carrying of infection into a home by, (a) the nurse engaged in bedside nursing, (b) the nurse engaged in infant hygiene and child hygiene as well as the quarantining of communicable diseases.

Discussion. MARGUERITE A. WALES, R.N., General Director Henry Street Nurse Service, New York City.

2. To what degree is a health department justified in extending free service without encroaching upon the field of cure in, (a) periodic health examinations for adults, (b) dental service, (c) developing specialties in a child hygiene program such as nutrition, posture and eye services.

Discussion. FRANCIS E. FRONCZAK, M.D., D.Sc.P.H., Commissioner of Health, Buffalo, N. Y.

Discussion of additional services invited from the floor.

Question Box.

Questions from the floor.

Fifth Session—Wednesday Evening

Association Business (Election of Governing Council).

Brief Reports of Association Committees.

Municipal Health Department Practice.

1. **Report of the Committee.** *Chairman* C.-E. A. WINSLOW, DR.P.H., Yale University, New Haven, Conn.
2. **The U.S. Public Health Service Survey.** HUGH S. CUMMING, Surgeon General, U. S. Public Health Service, Washington, D. C.
3. **The Cost of Public Health Work.** A. W. FREEMAN, M.D., School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.
4. **Advances in Sanitary Practice.** W. F. WALKER, D.P.H., Field Director, Committee on Municipal Health Department Practice, American Public Health Association, New York City.

EPIDEMIOLOGY

Public Health Administration, Laboratory, Sanitary Engineering and Vital Statistics Sections

Joint Session—Thursday Afternoon

The Present Status of the Influenza Problem. PROFESSOR E. O. JORDAN, Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

Discussion. W. H. FROST, Surgeon, U. S. Public Health Service, Professor of Epidemiology, Johns Hopkins University, Baltimore, M.D.

Diphtheria, Scarlet Fever and Measles: Modern Methods in the Prevention, Control and Specific Treatment. ABRAHAM ZINGHER, M.D., Dr.P.H., Health Department Laboratories, New York City.

Discussion. JOHN L. RICE, M.D., Health Officer, New Haven, Conn.

Pneumonia from the Public Health Viewpoint. CAREY J. VAUX, M.D., and HENRY J. BENZ, M.D., Department of Health, Pittsburgh, Pa.

Discussion. W. A. EVANS, M.D., Chicago Tribune, Chicago, Ill.

Epidemiological Methods in the Control of Respiratory Diseases. HENRY B. HEMENWAY, M.D., State Department of Public Health, Springfield, Ill.

OYSTER POLLUTION

Public Health Administration, Laboratory, Sanitary Engineering and Food and Drugs Sections

Joint Session—Tuesday Morning

The Engineering Aspects of Oyster Pollution. R. E. TARBETT, Sanitary Engineer, U. S. Public Health Service, Washington, D. C.

Discussion. W. F. WELLS, Sanitarian and Biologist to the Conservation Commission of New York State, Albany, N. Y.

The Laboratory Aspects of Oyster Pollution. LEONARD M. WACHTER, State Health Department, Albany, N. Y.

Discussion. H. D. PEASE, M.D., Pease Laboratories, New York City.
Viability of Typhoid Bacilli in Oysters with and without Chlorine Treatment. CHARLES KRUMWEIDE, JR., M.D., and WILLIAM H. PARK, M.D., Health Department Laboratories, New York City.
Self-Purification of Oysters During Hibernation. STEPHEN DEM. GAGE, Sanitary Engineer State Board of Health, Providence, R. I.

DIVISION OF RESPONSIBILITY BETWEEN PUBLIC AND PRIVATE AGENCIES FOR PUBLIC HEALTH NURSING SERVICE

Public Health Administration and Public Health Nursing Sections

Joint Session—Monday Morning

From the Point of View of the Contributing Citizen. MRS. CHURCHILL HUMPHREY, Louisville, Ky.
From the Point of View of the City Health Officer. ARTHUR O. PETERS, M.D., Health Commissioner, Dayton, O.
The Relation of a Child Health Demonstration to a Permanent Public Health Nursing Service. WALTER H. BROWN, M.D., Director Child Health Demonstration, Salem, Ore.
Building Up the Relationship Between Public and Private Agencies Responsible for Public Health Nursing Service. SOPHIE C. NELSON, R.N., Visiting Nurse Association, St. Louis, Mo.

HEALTH EDUCATION IN THE CLASS ROOM

Child Hygiene and Public Health Nursing Sections

Joint Session—Thursday Afternoon

The Teacher's Part. MAUDE BROWN, Child Health Demonstration, Fargo, N. D.
The Nurse's Part. ELMA ROOD, Director of Health Education, Child Health Demonstration, Mansfield, O.
Discussion. ALICE E. DOLBEY, Supervisor of School Nursing, Springfield, Ill.
Sources of Material. EVART G. ROUTZAHN, Associate Director Department of Surveys and Exhibits, Russell Sage Foundation, New York City.
Discussion. CLAIR E. TURNER, Associate Professor of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, Mass.
The Complete Program. B. G. SHACKELFORD, Assistant Superintendent of Public Schools, St. Louis, Mo.
Discussion. L. M. DOUGAN, Principal Eugene Field School, St. Louis, Mo.

INDUSTRIAL HYGIENE AND SANITARY ENGINEERING

Joint Session—Monday Morning

Problems of Carbon Monoxide and Automobile Exhaust Gases. GEORGE A. SOPER, PH.D., Managing Director American Society for the Control of Cancer, New York City.
Discussion. E. R. HAYHURST, M.D., College of Medicine, Ohio State University, Columbus, O.
The Necessity for Changes in the Ventilation Laws of the United States. LEONARD GREENBURG, PH.D., U. S. Public Health Service, New Haven, Conn.
Discussion. GEORGE T. PALMER, D.P.H., American Child Health Association, New York City.
Studies in Lighting Post Offices Made by the U. S. Public Health Service. JAMES E. IVES, Physicist U. S. Public Health Service, Washington, D. C.

INDUSTRIAL HYGIENE AND PUBLIC HEALTH ADMINISTRATION

Joint Session—Thursday Morning

The Relation of Public Health Departments of State and City to Industrial Hygiene Work and Industrial Hygiene Workers.
1. J. W. S. MCCULLOUGH, M.D., Provincial Board of Health, Toronto, Canada.

2. FRANCIS D. PATTERSON, M.D., Philadelphia, Pa.
3. LELAND E. COFER, M.D., Chief of Division of Industrial Hygiene, New York State Department of Labor, New York City.
4. H. L. ROCKWOOD, M.D., Commissioner of Health, Cleveland, O.

Discussion. L. R. THOMPSON, M.D., Assistant Surgeon General, U. S. Public Health Service, Washington, D. C., and ALONZO BLAUVELT, M.D., Second Deputy Commissioner of Health, New York City.

The **Advisability of Interstate Control of Poisonous and Hazardous Substances Other Than Foods.** JAMES A. TOBEY, Institute of Government Research, Washington, D. C.

Discussion. ETHELBERT STEWART, Commissioner U. S. Bureau of Labor Statistics, Washington, D. C.

SESSION ON MENTAL HYGIENE

National Committee for Mental Hygiene

Special Session—Thursday Morning

Mental **Hygiene and Its Relation to Public Health and the Practice of Medicine.** CHARLES P. EMERSON, M.D., Dean Indiana University School of Medicine, Indianapolis, Ind..

Community Aspects of Mental Hygiene. FRANKWOOD E. WILLIAMS, M.D., Medical Director National Committee for Mental Hygiene, New York City.

The **Rôle of the Child Guidance Clinic in the Mental Hygiene Movement.** RALPH P. TRUITT, M.D., Director Division on the Prevention of Delinquency of the National Committee for Mental Hygiene, New York City.

PUBLIC HEALTH ADMINISTRATION

First Session—Wednesday Morning

Section **Business** (Election of Officers).

Mouth Hygiene for the Adult. VIRGIL LOEB, D.D.S., School of Dentistry, Washington University, St. Louis, Mo.

Discussion. LOUIS OTTOFY, D.D.S., M.D., Chicago, Ill.

The **Value of City Health Department Reports.** PROFESSOR IRA V. HISCOCK, Yale University, New Haven, Conn.

Discussion. FRANCIS G. CURTIS, M.D., Chairman Board of Health, Newton, Mass.

The **Education and Care of Undernourished Pre-Tuberculous Children.** H. DE LAMATER, M.D., Health Officer, St. Joseph, Mo.

Discussion. ROBERT E. PLUNKETT, M.D., Director, Division of Tuberculosis, State Department of Health, Albany, N. Y.

Social Hygiene and Venereal Disease Control. CHARLES E. MINER, Executive Secretary, Missouri Social Hygiene Association, St. Louis, Mo.

Discussion. FRANK J. OSBORNE, Health Officer, East Orange, N. J.

Syracuse Health Demonstration. Record Forms. A Preliminary Report. GEORGE C. RUHLAND, M.D., Department of Health, Syracuse, N. Y.

Discussion. W. S. RANKIN, M.D., Director of Hospital and Dependent Children Sections, Duke Endowment, Raleigh, N. C.

Reports of **Committees.**

LABORATORY

First Session—Monday Morning

Section **Business.**

Program Planning. *Address of the Chairman.* NORMAN MACL. HARRIS, M.B., Chief Laboratory of Hygiene, Department of Health, Ottawa, Canada.

Address. PROFESSOR ARTHUR I. KENDALL, Department of Biology and Public Health, Washington University School of Medicine, St. Louis, Mo.

Report of **Referee for the Bacteriological Examination of Milk.** ROBERT S. BREED, PH.D., Chief of Research, Division of Bacteriology, New York Agricultural Experiment Station, Geneva, N. Y.

Comparative Studies of Media for Estimating Bacteria in Milk. JOHN F. NORTON, PH.D., and MARGARET SEYMOUR, S.M., Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

Comparative Studies of Media for Shipping Specimens for Isolation of Typhoid Bacilli. E. MARION WADE, Chief of Laboratories, Minnesota State Board of Health, Minneapolis, Minn.

An Apparatus for the Generation of Hydrocyanic Acid Gas for Disinfecting Rooms. W. R. STOKES, M.D., Director Bureau of Bacteriology, Health Department, Baltimore, Md.

Second Session—Wednesday Morning

Section Business (Election of Officers).

Detection of Amoebae in Cases of Systemic Amoebic Infections. HENRY ALBERT, M.D., Director State Hygienic Laboratory, Reno, Nev.

Detoxication of Putrefactive Products by the Human Body. WM. WOLF, M.D., and CARL P. SHERWIN, M.D., DR.P.H., Fordham University, New York City.

Intestinal Parasites in Western Mississippi. LEON S. LIPPINCOTT, M.D., Director of Laboratories, and SALLIE LOU LOTT, Vicksburg Sanitarium and Crawford Street Hospital, Vicksburg, Miss.

The Significance of Bacteriophage in Surface Water. LLOYD ARNOLD, M.D., Professor of Bacteriology and Pathology, Loyola University School of Medicine, Chicago, Ill.

The Rôle of the Washings of Streptococcus Scarlatinae in Scarlet Fever. N. S. FERRY, M.D., Parke, Davis & Company, Detroit, Mich.

Laboratory Differentiation of Smallpox and Chickenpox. T. G. HULL, PH.D., Chief Division of Laboratories, and R. W. NAUSS, M.D., Department of Public Health, Springfield, Ill.

Report of Committee on Standard Methods. *Chairman* PROFESSOR E. O. JORDAN, Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

VITAL STATISTICS

First Session—Monday Morning

Practical Procedure for Securing and Maintaining Satisfactory Birth, Stillbirth and Death Registration. SHELDON L. HOWARD, Registrar of Vital Statistics, Department of Health, Springfield, Ill.

Discussion. W. A. DAVIS, M.D., Director Bureau of Vital Statistics, State Board of Health, Atlanta, Ga.

The Functions of a State Bureau of Vital Statistics. W. THURBER FALES, Director Bureau of Vital Statistics, Montgomery, Ala.

Discussion. G. A. THEILMAN, Statistician State Board of Health, Jefferson City, Mo.

The Legal Side of Birth Registration. BURT E. BROWN, State Registrar, State Board of Health, Topeka, Kans.

Discussion. J. V. DEPORTE, PH.D., Director Division of Vital Statistics, State Board of Health, Albany, N. Y.

Report of Committee on Place of Meeting of International Commission for Revision of International List. *Chairman* WILMER R. BATT, M.D., State Registrar, Department of Health, Harrisburg, Pa.

Report of Committee on Accuracy of Certified Causes of Death and Its Relation to Mortality Statistics and the International Classification. *Chairman* HAVEN EMERSON, M.D., Department of Public Health Administration, Columbia University, New York City.

Seasonal Changes in the Birth Rate. LOWELL J. REED, Department of Biometry and Vital Statistics, Johns Hopkins University, Baltimore, Md.

Second Session—Tuesday Morning

Section Business (Election of Officers).

Registration the Foundation of Vital Statistics. WILLIAM H. DAVIS, M.D., Bureau of the Census, Washington, D. C.

Report of Committee on Registration Affairs. *Chairman* WILLIAM H. DAVIS, M.D., Bureau of the Census, Washington, D. C.

Discussion. WILMER R. BATT, M.D., State Registrar, Department of Health, Harrisburg, Pa., and FREDERICK L. HOFFMAN, LL.D., Consulting Statistician Prudential Insurance Co., Newark, N. J.

Aids in Securing Better Registration. ARTHUR T. DAVIS, M.D., Executive Secretary Health and Welfare Commission, Dover, Del.

Discussion. J. B. BOND, M.D., Superintendent Division of Vital Statistics, Department of Public Health, Nashville, Tenn.

Report of Committee on Public Health Climatology. *Chairman* E. W. KOPF, Metropolitan Life Insurance Company, New York City.

Report of Committee on Correspondence Study Courses. *Chairman* W. J. V. DEACON, M.D., Director Bureau of Records and Statistics, State Department of Health, Lansing, Mich.

Suggestions for Securing Information on Accidental Deaths. S. J. WILLIAMS, Director Public Safety Division, National Safety Council, Chicago, Ill.

Discussion. LOUIS I. DUBLIN, PH.D., Statistician Metropolitan Life Insurance Company, New York City.

Third Session—Wednesday Afternoon

Distribution of Deaths of Non-Residents. WILLIAM H. GUILFOY, M.D., Registrar of Records, Department of Health, New York City.

Discussion. JOHN O. SPAIN, Bureau of the Census, Washington, D. C.

Prospects of Increasing the Percentage of Death Certificates Signed by Physicians. CLARENCE F. KENDALL, M.D., Commissioner State Department of Health, Augusta, Me.

An Analysis of the Death Rate of Detroit. W. J. V. DEACON, M.D., Director Bureau of Records and Statistics, State Department of Health, Lansing, Mich.

Discussion. E. W. KOPF, Metropolitan Life Insurance Company, New York City.

Morbidity Statistics. E. H. LEWINSKI-CORWIN, PH.D., Executive Secretary Public Health Committee, Academy of Medicine, New York City.

Discussion. EDGAR SYDENSTRICKER, Statistician U. S. Public Health Service, Washington, D. C.

Coöperation. HARRY G. SAMSON, Chairman of Commission, American Institute of Funeral Directors, Pittsburgh, Pa.

Discussion. HAVEN EMERSON, M.D., Department of Public Health Administration, Columbia University, New York City.

Report of Committee on Contributory Causes of Death. *Chairman* GEORGE H. VAN BUREN, Metropolitan Life Insurance Company, New York City.

Report of Committee to Assist Memphis Health Department. *Chairman* HENRY B. HEMENWAY, M.D., State Department of Public Health, Springfield, Ill.

SANITARY ENGINEERING

First Session—Wednesday Afternoon

Section Business (Election of Officers).

Protection of Highway Water Supplies. EARLE L. WATERMAN, Professor of Sanitary Engineering, State University of Iowa, Iowa City, Ia.

Discussion. W. H. DITTOE, Chief Division of Sanitary Engineering, State Department of Health, Columbus, O.

Signs for Highway Water Supplies. H. F. FERGUSON, Chief Engineer, State Department of Public Health, Springfield, Ill.

Sanitation of Motor Camps. C. G. GILLESPIE, Chief Engineer, State Board of Health, Sacramento, Calif.

Sewage Treatment for Golf Clubs. FRANK W. JONES, Cleveland, O.

Report of Committee on Waterways Sanitation. *Chairman,* CLARENCE M. BAKER, Chief Engineer State Board of Health, Madison, Wis.

Report of Committee on Sewerage and Sewage Disposal. *Chairman,* JOHN F. SKINNER, Deputy City Engineer, Rochester, N. Y.

Report of Committee on Sludge Disposal. *Chairman,* LANGDON PEARSE, Sanitary Engineer, Sanitary District of Chicago, Ill.

Second Session—Thursday Morning

The Unification of Milk Control in the United States. LESLIE C. FRANK, Associate Sanitary Engineer U. S. Public Health Service, Mobile, Ala.

Some of the Engineering Aspects of Pasteurization. EARLE B. PHELPS, Professor of Sanitary Science, College of Physicians and Surgeons, Columbia University, New York City.

Mosquito Work in the South. GEORGE W. SIMONS, JR., Jacksonville, Fla.
Mosquito Work in the North. A. F. DAPPERT, Assistant Sanitary Engineer State Department of Public Health, Springfield, Ill.
Report of Committee on Milk Supply. *Chairman*, H. A. WHITTAKER, Director Division of Sanitation, State Board of Health, Minneapolis, Minn.
Report of Committee on Water Supply and Purification. *Chairman*, W. H. DITTOE, Chief Division of Sanitary Engineering, State Department of Health, Columbus, O.
Report of Committee on Refuse Collection and Disposal. *Chairman*, C. A. HOLMQUIST, Director Division of Sanitation, State Department of Health, Albany, N. Y.
Report of Committee on Mosquito Control. *Chairman*, LEWIS E. JACKSON, Executive Secretary Mosquito Extermination Commission, Hudson County, Jersey City, N. J.

INDUSTRIAL HYGIENE

First Session—Wednesday Morning

Section Business (Election of Officers).
The Relative Value of the Physical Examination of Food Handlers in Preventing the Spread of Diseases from Food Handling Establishments. L. B. GLOYNE, M.D., Health Officer, Kansas City, Kans.
Report of Committee on Extension of Industrial Hygiene. F. L. RECTOR, M.D., Editor *The Nation's Health*, Chicago, Ill.
A Future Development in Industrial Hygiene. D. C. PARMENTER, M.D., Industrial Clinic, Massachusetts General Hospital, Boston, Mass.
Report on the Fourth International Congress on Accidents and Diseases, Amsterdam, Holland, 1925.
Report of Committee on Painters' Hazards. *Chairman*, WADE WRIGHT, M.D., Harvard Medical School, Boston, Mass.
Report of Committee on Industrial Anthrax. *Chairman*, HENRY FIELD SMYTH, M.D., University of Pennsylvania, Philadelphia, Pa.
Chronic Zinc Poisoning. W. E. BROWN, M.D., Cincinnati, O.

FOOD AND DRUGS

First Session—Wednesday Afternoon

Section Business (Election of Officers).

NUTRITION

Report of the Committee on Nutritional Problems. *Chairman*, PROFESSOR HENRY C. SHERMAN, Columbia University, New York City.
The Chemistry of Proteins in Relation to Nutrition. D. B. JONES, PH.D., Bureau of Chemistry, Washington, D. C.
The Vitamin Content of Some Common Foods. WALTER H. EDDY, Professor of Physiological Chemistry, Teachers College, Columbia University, New York City.
Nutritional Problems of Interest to the Baker. H. E. BARNARD, PH.D., Director American Institute of Baking, Chicago, Ill.

Second Session—Thursday Afternoon

Reports of Committees.
Fruits, Vegetables and Their Products. *Chairman*, A. M. G. SOULE, Chief Bureau of Inspection, Department of Agriculture, Augusta, Me.
Drugs and Pharmaceuticals. *Chairman*, LYMAN F. KEBLER, M.D., Washington, D. C.
Dairy Products and Eggs. *Chairman*, H. W. REDFIELD, PH.D., U. S. Department of Agriculture, New York City.
Meat, Fish and Shellfish. *Chairman*, WILLIAM H. LIPMAN, M.D., Swift & Company, Chicago, Ill.
The Sanitary Control of Beverages in Cleveland. H. J. KNAPP, M.D., Chief Bureau of Laboratories, Health Department, Cleveland, Ohio.
Therapeutic Applications of Mercurial Antiseptics. E. C. WHITE, PH.D., Hynson, Westcott & Dunning, Baltimore, Md.

CHILD HYGIENE

First Session—Tuesday Morning

NEW STEPS IN CHILD HYGIENE

A **Municipal Child Health Program.** CHARLES F. WILINSKY, M.D., Deputy Health Commissioner in charge of Child Hygiene and Health Units, City Health Department, Boston, Mass.

Discussion. A. ELIZABETH INGRAHAM, M.D., Director Bureau of Child Hygiene, State Health Department, Hartford, Conn.

A **Scoring Plan for School Health.** HAROLD H. MITCHELL, M.D., Director of School Hygiene, City Board of Health, Fall River, Mass.

Discussion. PHILIP S. PLATT, C.P.H., American Child Health Association, New York City.

The **Possibilities in Dental Hygiene.** HAROLD DEW. CROSS, D.M.D., Director of the Forsyth Dental Infirmary for Children, Boston, Mass.

Discussion. TALIAFERRO CLARK, M.D., Senior Surgeon U. S. Public Health Service, Washington, D. C.

Health **Classes in the School Program.** JAMES STEWART, M.D., Health Commissioner, State Board of Health, Jefferson City, Mo.

Discussion. GEORGE P. BARTH, M.D., Director of School Hygiene, Department of Health, Milwaukee, Wis.

Second Session—Wednesday Morning

Section **Business** (Election of Officers).

HEALTH EXAMINATIONS OF SCHOOL CHILDREN

The **Pre-School Child.** BORDEN S. VEEDER, M.D., St. Louis, Mo.

Discussion. ADA E. SCHWEITZER, M.D., Director Child Hygiene Division, State Board of Health, Indianapolis, Ind.

The **School Child.** CARL E. BUCK, D.P.H., Epidemiologist and Director of Research, Health Department, Detroit, Mich.

Dental **Examinations of School Children.** THOMAS C. MCCRUM, D.D.S., Kansas City, Mo.

Should **the Health Examination be a Screening or a Diagnosis?** MERRILL E. CHAMPION, M.D., Director Division of Hygiene, State Department of Public Health, Boston, Mass.

Discussion. FRANCIS E. HARRINGTON, M.D., Commissioner of Health and Director of School Hygiene, Minneapolis, Minn.

Dinner Session—Wednesday Evening

Under the auspices of the Committee on School Health Problems, *Chairman*, MERRILL E. CHAMPION, M.D., Director Division of Child Hygiene, State Board of Health, Massachusetts.

HEALTH EDUCATION AND PUBLICITY

First Session—Tuesday Morning

Section **Business** (Election of Officers).

CLINIC ON PUBLIC SPEAKING

Talk on Health Examinations Before a Rotary Club. L. C. BULKLEY, General Secretary Shreveport Federation of Community Work, Shreveport, La.

Sex Hygiene for a Group of Girls. HARRIET STEVENS CORY, M.D., Missouri Social Hygiene Association, St. Louis, Mo.

Explaining to Food Handlers the Reasons for the Medical Examination. RAY S. DIXON, M.D., City Health Department, Detroit, Mich.

Outlining Need for Accurate Statistics at a Conference of Tuberculosis Secretaries. JESSAMINE WHITNEY, Statistician National Tuberculosis Association, New York City.

Each speaker will have ten minutes. When all are through, the talks will be criticized by ISAAC LIPPINCOTT, PH.D., Professor of Economics, Washington University, St. Louis, Mo.

General Discussion and questions, opened by IAGO GALDSTON, M.D., Secretary of Speakers and Industrial Service, New York Tuberculosis and Health Association, New York City.

Luncheon Session—Wednesday Noon

Motives Which Bring Action. A Discussion based on samples of Publicity and Educational Material.

Discussion Consultants. FRANKWOOD E. WILLIAMS, M.D., Medical Director National Committee for Mental Hygiene, New York City, and ETHEL M. RIDDLE, PH.D., Psychologist, Community School and John Burroughs School, St. Louis, Mo.

Second Session—Thursday Morning

CLINIC ON MOTION PICTURES

Not a mere showing, but a demonstration of the actual methods of analyzing health films from the standpoint of scientific accuracy, educational value, and motion picture technique.

Three one-reel films on public health will be displayed and criticized by CARLYLE ELLIS of New York City, representing the motion picture industry, and by H. E. KLEINSCHMIDT, M.D., State Department of Health, Columbus, O., representing public health.

A fourth one-reel film will be criticized by the Health Films Committee of the National Health Council, under the chairmanship of A. J. LANZA, M.D., Executive Officer, National Health Council, New York City.

Special Sessions

An invitation dinner for those actually engaged in professional public health publicity work, to exchange ideas and report progress.

Meeting of the editors of all public health magazines.

Note: Various health exhibits will be displayed and an information and consultation desk will be maintained, in charge of the secretary of the Section, Evart G. Routzahn.

PUBLIC HEALTH NURSING

Wednesday Morning

Section Business (Election of Officers).

Report of the Committee on Standard Forms for Annual Reports of Visiting Nurse Associations. *Chairman*, MARGARET K. STACK, R.N., State Department of Health, Hartford, Conn.

Report of the Committee on Qualifications for Public Health Nursing Positions. *Chairman*, HELEN LAMALLE, Metropolitan Life Insurance Co., New York City.

ADDITIONAL DINNER MEETINGS

Thursday Evening

Association of Officers and Ex-Officers, Engineering Section, Sanitary Corps, U. S. Army.

Wednesday Evening

Directors of State Health Department Laboratories.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to office in New York City. In replying give age, professional training, salary requirement, previous positions held and three or more references.

Wanted: Young man, stenographer, of broad education, with secretarial experience, to serve as assistant to president of concern publishing hospital and health magazines. Unusual opportunity to develop natural abilities along editorial, sales or executive lines, or build background for administrative work in hospital and health fields. Address 609 H. M., care of this JOURNAL, New York address.

Wanted: Young physician with experience in communicable diseases and laboratory work to assist health officer of a mid-western city of 50,000. Good opportunity for one wishing to enter public health work. Salary $2,500 per year. Submit full information with first letter. Address 610 N. C., care of this JOURNAL, New York address.

Wanted: Inspector of Milk, and Sanitary Inspector in city of 20,000 population. Experience in laboratory examination of milk required. Address, stating experience and qualifications, Health Officer, Attleboro, Massachusetts.

POSITION WANTED

Positions wanted announcements of 50 words or less will be carried for individuals at a charge of $2.00 per insertion. Copy should be received at the New York office by the 8th of the month preceding publication.

Wanted: Young man desires position in municipal or county laboratory as bacteriologist. Holds B.S. from eastern college and equivalent of M.S. from large mid-western university. Willing to work. Address 374 B. C., care of this JOURNAL, New York address.

Public health position: Have B.S. and M.D. degrees and one year's internship; also special health training. Health officer of city over 100,000 for past 5 years; teacher of preventive medicine in Class A medical school. Have literary and executive ability, also a personality to put over a health program. Full data on application to 372 G. L., care of this JOURNAL, New York address.

Bacteriologist, M.S., with 8 years, teaching and laboratory experience, desires teaching or laboratory position. Thorough training in bacteriology, serology, pathology and physiological chemistry. Address 373 K. G., care this JOURNAL, New York address.

Wanted: Full-time position as city health officer by physician with experience. Have been county health officer for over 5 years; city work also on full time for nearly two years; public health course at Johns Hopkins for 1 year. References furnished. Address 358 C. K., care of this JOURNAL, New York address.

Wanted: Teaching position in pathology, bacteriology and public health and clinical laboratory directorship. Teaching and practical experience; director of base hospital laboratory and state public health laboratory; foreign study also. American, Protestant, Rotarian; available September. Address 336 W. S., care this JOURNAL, New York address.

Health Officer and Administrator: Thoroughly experienced and seasoned health commissioner in all branches and departments wants full-time position in organization or administrative work. Holds M.D. degree and public health certificates; 38 years of age, in good health, and have integrity and good appearance. At present with city and county health organization but desires change. Any location. Excellent references. Address 331 J. J., care this JOURNAL, New York address.

Wanted: Position in state, county or city health department or in college by physician experienced in all modern lines of public health activities, especially epidemiology and educational and publicity work. University training in public health. Address 371 M. F., care of this JOURNAL, New York address.

ADDITIONAL OPPORTUNITIES

In addition to the positions noted above, the Employment Bureau of the Association has had requests for the following types of workers:

Tuberculosis expert to handle medical work of a tuberculosis demonstration in a large mid-western city.

Good organizer and executive to serve as health officer in a southern city of 30,000. Besides the regular duties of health officer, the welfare agencies and city hospital will be under his direction.

Two secretary-stenographers for public health laboratory of eastern state health department.

Executive secretary of an active public health association in a mid-western city of 250,000.

Laboratory technician to make water and milk analyses, typhoid examinations, and run alkalinity and acidity tests on water samples.

School nurse in an eastern county to work for a county tuberculosis and public health society.

District health commissioner in a mid-western state. Must be a licensed physician and well experienced in health administration.

Associate professor in the department of preventive medicine in a southern university. Activities require a varied knowledge of public health laboratory methods, both practical and theoretical.

Members may obtain information regarding these positions by writing to the Employment Bureau of the Association, 370 Seventh Avenue, New York City.

BOOKS AND REPORTS

The Inheritance of Mental Diseases—*By Abraham Myerson. Baltimore: Williams & Wilkins.* 336 pp., numerous diagrams in text. 1925. Price $5.00.

This work is dominated by the view that environment rather than heredity plays the principal rôle in mental diseases. The author is professor of neurology in Tufts College Medical School and has had a wide experience in dealing with mental disease and its physical basis. His aim is to present the subject not only for the physician in general practice or engaged in non-psychiatric work, but also for the biologist, the social worker and the layman who may be interested in this much mooted subject. He advises the discarding of the term insanity since the unitary connotation is unscientific.

As to the transmissible mental diseases, he raises the question as to whether they are really hereditary characters in the sense that stature or blue eyes are, or whether they merely represent diseases caused by unknown agents whose effects persist over two or more generations and from which a stock may either die or recover. This latter view, which is akin to the results obtained by Kammerer in some of his experiments on color modifications in salamanders, is the one adopted by the author. This view affords the author the basis for the belief that social efforts are racial efforts and have a eugenical backing. Therefore, mental hygiene is not dysgenic and injurious to the race. He notes in support of his view that not many cases of four generation mental disease have been recorded since it is rare for mental disease to last four generations in any one group. How much statistical fallacy may lie in this generalization cannot be determined at present.

The work is of value for its point of view, and there is need of open-mindedness in this field in this age of the dominant influence of the belief in the potency of heredity. Much more work of a critical nature is needed in this field before far-reaching conclusions of permanent value should be promulgated.

C. A. Kofoid

Handbuch der **Tropenkrankheiten**—*Herausgegeben von Professor Dr. Carl Mense. Leipzig: Ambrosius Barth.* Ed. 3, vol. 2, xiv+1019 pp., 18 pls. (14 in colors), 306 figs. in text. 1924. Price 66 gold marks; bound 70 gold marks.

The second volume of this valuable encyclopaedia of tropical diseases is of especial value to workers in public health since it treats of leprosy, plague, and cholera. These three devastating diseases are fortunately now so completely known that measures for their cure, or at least for their eradication and control, may be applied with fair certainty of success. Even the catastrophe of the World War did not precipitate a pandemic of either cholera or plague. Although it repeatedly increased the facilities for such outbreaks and even started them locally, scientific control held them in check.

The chapter on leprosy is written by Dr. George Sticker of Würzburg. His historical discussion is detailed, informing and well illustrated. It traces the slow elaboration of methods whereby ecclesiastical and medical authorities segregated from the moral and physical lepers those suffering from true leprosy, rather than syphilis, cancer, scrofula, and other disfiguring ailments. It is a long road from the hopeless banishment of the "leper's squint" to the modern leprosarium and the cure with the derivatives of chaulmoogra oil. The author, it seems, is ultraconservative on the results of this treatment, reserving judgment on the success until more time has lapsed. His concluding statement is that leprosy is an incurable disease and that the sufferers are best taken care of in a well equipped leprosarium.

The extensive chapter (104 pages) on the plague is written by Dr. P. C. Flu of the Institute of Tropical Medicine in Leiden. His extensive experience in the Dutch East Indies in the study of this disease and in methods of combating it peculiarly fit him to treat this subject. Central Asia and the highlands of Central Africa are both under suspicion as ancient and persistent endemic foci of this disease. The black death of the 14th century which took a toll of 25,000,000 in Europe is supposed to have come from India (by Fracastori) or from China.

The latest pandemic which appeared at Hongkong in 1894 has been traced as far back as 1853 in the Province of Yunnan. This disease is primarily one of rodents, but passes from them to man by the bite of the contaminated flea as bubonic plague, at times changing in him to the pneumonic type in which direct contagion from man to man occurs without the intervention of an insect vector. Not only are all the known species and varieties of the rat implicated in the spread of the plague, but also various other local genera and species of rodents which are not carried about the world by shipping as are the rats. Thus in Manchuria the marmot (*Arctomys bobac*) and in California the ground squirrel (*Citellus beecheyi*) became the reservoir of infection. Plague infection has also been found in the hare, and ape. Bats and cats also can be infected. Dr. Flu is convinced that in the tropics, at least, only one of the fleas, *Xenopsylla cheopis*, is *mainly* concerned in the spread of the plague from the rat to man. While the movements of rats, their numbers as affected by local conditions, and their breeding habits, and the dispersal of fleas from rats dead of the plague, all combine to profoundly affect the course of an epidemic of the plague, Dr. Flu is of the opinion that human travel involving not only infected persons, but also the carrying of infected fleas, is responsible for those outbreaks outside of an infected area. In Java outbreaks appear on main lines of travel.

The subject of cholera is treated by Professor Paul Krause of Münster. The success in the control of this deadly disease even under the World War conditions is clearly seen in German records which show that during the four years of the war cholera made no advances and was considerably exceeded in incidence by typhoid, dysentery, and malaria both in field troops and in reserves. The persistence of carriers after recovery is noted, but a duration of this condition beyond two months is so rare that the agency of carriers in the spread of the disease is regarded as restricted. Quarantine, disinfection, the destruction of dejecta, the sanitary care of food and water, and the avoidance of dietary excesses are approved as means of protection.

Sprue is discussed by Dr. H. Dold of the Behring Institute at Marburg. He rejects the view of Ashford that sprue is due to *Monilia*, but includes it in the group of acid and gas forming organisms by whose combined action the clinical picture of sprue is produced.

Space does not permit more than a mere

mention of other inviting sections of this elaborate work such as Malta fever by Mayer; Psittakosis derived from American parrots by Rho; the mite-borne Tsutsugamushi disease by Miyajima; beriberi by Nocht; the very extensive discussion of tropical skin diseases by Plehn and Mense; of plant poisons by Rho; and of poisonous animals by Faust. For all of these the interested reader will find in this work a mine of information, ample treatment in full detail of all pertinent aspects, and an extensive bibliography. For scope, completeness of treatment, scholarly analysis, fine illustration and adequate bibliographies, this encyclopedia of tropical diseases is unsurpassed. C. A. KOFOID.

Le Développement de L'Infection Bacillaire Chez L'Homme—*By E. Aubertin. Paris: Gaston Doin,* 1924. Paper. Price 20 francs.

The author in this, his first book, undertakes to combat several fairly well established facts concerning tuberculous infection in human beings. He holds that a moderate infection in infancy or childhood has no vaccinal effect in preventing tuberculosis later, and that infection takes place almost always through the respiratory tract. Both of these propositions have undergone intensive study in the last twenty years, and most of us have believed that fairly definite knowledge concerning them had been reached. It comes, therefore, as something of a shock to find a young man writing his first book attacking ideas widely held by specialists in this line of work throughout the world.

Unfortunately, we fail to find in the pages of the book any due consideration of the literature of the subject. As far as the evidence goes, the author is innocent of any knowledge of much that has been done in various countries. France has given us men like Villemin, Chauveau, Nocard, Arloing, and Calmette, all of whom have demonstrated the digestive tract as an easy route for tuberculous infection. The chief consideration given to their work, as well as to that of others, is contained in quotations from Professor Leuret, who has evidently had much influence on the author's point of view. We have failed to find even a mention of the work done by the English and German commissions following the London Congress on Tuberculosis. We miss the usual careful consideration of evidence characteristic of French writers.

The book does contain some useful chapters, but its chief value seems to lie in the emphasis placed upon the individual, his relative susceptibility or resistance, or as the author expresses it, the tuberculizable soil. He holds that the children of tuberculous parents are neither predisposed to the disease nor or they immunized. Among such children some are refractory and some susceptible. Infection can take place at all ages and in all individuals.

The last chapter is devoted to general conclusions and their application. Since we believe that the author has some erroneous views concerning the methods of spread of tuberculosis, it is only natural that his conclusions should in our judgment fall short of being correct. Some of them are, of course, valuable.

The book is written in French and may not have an English translation, a matter which we cannot find it in our hearts to regret.

M. P. RAVENEL.

Elements of Physical Biology—*By Alfred J. Lotka. Baltimore: Williams & Wilkins Co.* xiv+460 pp., 71 figs. in text. 1925. Price $5.00.

This is a new book introducing a new science, by analogy bearing a relation to biology similar to that which physical chemistry bears to chemistry in general. The author is research statistician of the Metropolitan Life Insurance Company and was formerly connected with the School of Hygiene and Public Health at Baltimore. The field of the book is distinct from biophysics which is the analogue, in part at least, of biochemistry. It deals with the kinetics, statics and dynamics of the evolution of living organisms, not so much as individuals as species or groups of species, and of the interrelations of organisms with the environment. It is therefore quantitative in treatment and illustrated by graphs and analyzed by mathematical processes expressed in formulæ. While highly technical in parts, it is so comprehensive in scope and so dramatically written that one not familiar with the mathematical treatment will, nevertheless, find the book most interesting and stimulating. The public health worker and vital statistician will find in it an exceptional opportunity to orient himself and his field of endeavor in the dynamic complex of the living world viewed as a going concern.

C. A. KOFOID.

The Origin of **Man**—*By Carveth Read, M.A. (Cantab.), Emeritus Professor in the University of London. Cambridge: The University Press,* 1925. 100 pp. Price, $2.00.

Man and His Superstitions—By Carveth *Read, M.A. Cambridge: The University Press,* 1925. 278 pp. Price, $5.00.

These two books were published in 1920 as one volume under the title "The Origin of Man and His Superstitions," and the two volumes now before us are the second edition of the original work.

The author's theory, which he says is much the same as that proposed without his knowledge and before the publication of his own book by Mr. Morris, an American, is that man owes his advance to the fact that very early in his history he developed the taste for animal food. Being without weapons, he soon found that it was a good plan for men to hunt together in packs. There was no election of a chief, but those individuals who were strongest and most successful in the chase naturally became leaders. The necessities of the case brought him into the open, and thus ceasing to be arboreal in his habits, his legs developed as compared to his arms, and this permitted the hand to become specialized. Man came from the same stock as some of the higher apes, as the ourangs and chimpanzees, which have not shown much progress, not having developed the same tastes nor encountered the same difficulties as man. They have remained solitary, or in small family groups, retaining their vegetarian habits, defending themselves when attacked rather than being aggressive. This primitive man, *Lycopithecus* was savage, a sort of wolf-ape, and went in packs for the purpose of killing, which may explain the savagery which seems to be in all of us hidden by a thin veneer of civilization.

The second volume carries us through the development of man from the pack into a coördinate society. The original leaders who won their places by success in the chase, were replaced by those who acquired shrewdness enough to make use of superstitions and belief in magic. The magician replaced the chief hunter, and was in turn replaced by the wizard-king or the priest-king, or a king supported by wizards and priests.

It is needless to say that many of the theories of the author remain without proof, while on the other hand, many facts indicate that his line of reasoning may be correct.

The author is an interesting writer and throughout the book we find evidences of wisdom as well as wit. The book is one which does not tend to make us conceited as to our origin and rise. Concerning the future, the author makes no prediction and ends by saying: "The only safe reflection is that he who lives longest will see most."

For those who are interested in the study of man and in the explanation of his nature and peculiarities as they are seen today, the book can be recommended as original, thoughtful and interesting. M. P. RAVENEL

Food Facts for Every Day—*For Upper Elementary and Junior High School Boys and Girls. By Florence E. Winchell, Head of Department of Home Economics, New York State College for Teachers, Albany, New York. Philadelphia: Lippincott,* 1924. Pp. 107. Price 86 cents.

Teachers in charge of upper elementary or junior high school classes facing the formal courses in physiology and in cooking prescribed for these grades will welcome Miss Winchell's little book as a veritable inspiration. When we say that it popularizes the whole subject of food selection we do not mean that it is presented in a catchy style which lilts along quite independent of the facts. What we do mean is that the connection between fundamental science and every day food and health problems is stated so clearly and logically that the interest in its practical applications is assured.

The first chapter opens with the question, "Would you believe that the two dogs shown in Fig. 1 were born of the same litter?" And what boy or girl, or, for that matter, what parent who might chance to pick up the book could stop until he or she had read far enough to have it explained that there is a "right way to feed pups." The right way to feed chickens, pigs, and calves is also discussed and there are interesting illustrations showing boys and girls with their prize winning animals.

The baby receives his share of attention in chapter two, while chapter three talks of "better care of boys and girls."

The food needs of the body and the right foods for supplying these needs are discussed briefly but comprehensively.

Besides the usefulness of this book as a school text it will be an admirable reference to pass on to any person who is interested even mildly in improving his diet.

ANNA R. VAN METER

Leprosy—*By Sir Leonard Rogers, C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S., I.M.S. (Retired), Physician and Lecturer, London School of Tropical Medicine, late Professor of Pathology, Calcutta Medical College; and Ernest Muir, M.D., F.R.C.S., Edin., Research Worker in Leprosy at the School of Tropical Medicine and Hygiene, Calcutta. New York: William Wood and Company.* 301 pp. Price, $4.75.

The story of leprosy has come down to us through the ages, full of mystery, superstition and dread. Fifty years ago the bacillus was discovered, but up to the present time has not been cultivated nor has the method of transmission been discovered. A loathsome and incurable disease, its victims have been ostracized, shunned as unclean, and treated, sometimes even in this enlightened age, with cruelty which passes understanding. Fortunately a happier era has dawned. Wise segregation, as in Norway and Sweden, has shown our ability to prevent the spread of the disease, and recently the isolation of the esters of chaulmoogra oil by Dean and McDonald, has given us a curative agent which has been used with great success.

The book consists of the first three Croonian Lectures for 1924, given before the Royal College of Physicians of London, by Sir Leonard Rogers, in an amplified form. Every phase of the subject, beginning with history and distribution and ending with treatment, is adequately considered. We know of no other volume which gives such accurate and up-to-date information of the distribution and prevalence of the disease.

The book is well written, and well illustrated with reproductions of photographs, maps, charts, and diagrams. It can be confidently recommended not only to health officers, but to all interested in this disease of the ages.

M. P. RAVENEL.

The Psychology of the Preschool Child—*Bird T. Baldwin and Lorle I. Stecher. New York: D. Appleton & Co.*, 1924. Pp. v+ 305. Price, $2.25.

The results of three years' work with 105 children from 2 to 6 years of age, studied from the standpoint of physical growth and mental development, are embodied in this book. These studies were made in the Preschool Laboratories of the Child Welfare Research Station at the University of Iowa. In the language of the authors, the object of this study was "to begin the psychological analysis of the child's development and to furnish at least tentatively some standards of development along physical, mental, educational, and social lines. . . . to help meet the urgent needs of the widespread interest in the study and care of the training of the preschool children."

Physical growth was studied from the standpoint of a number of physical traits. In the group under observation, the greatest increases in development were found in stature, span of arms and weight, and the least growth in the size of the head. Furthermore, it was observed that in anatomical growth the girls were further developed than the boys, and had attained a higher percentage of their six-year stature and weight. Observation showed that the larger children in each of the age groups were apparently accelerated physiologically.

Mental development was studied from the standpoint of general intelligence and learning; motor control and coördination; perception, association and language; rhythm, design, and proportion; concepts of weight, number, and time; and the relation of practice, sex, and some physical traits to mental traits.

A complete description is given of the tests employed and the manner of their application.

The results of these studies thus far "show that examinations can be devised to give reliable measures of the mental ability of very young children who have heretofore been considered entirely beyond the province of psychological experiments." The reader is referred to this instructive volume for the results of these experiments in the different fields, which should be of value to every parent, teacher and worker interested in child health.

TALIAFERRO CLARK.

Serum Diagnosis of Syphilis by Precipitation—*R. L. Kahn, Sc.D., Immunologist to the Bureau of Laboratories, Michigan Department of Health. Baltimore: Williams & Wilkins Company*, 1925. Cloth. Price, $3.00.

Primarily, the book is a collection of the author's experimental studies in the development, standardization, and clinical application of the precipitation reaction which bears his name.

Most of the work has been published before and the book offers very little new material to the laboratory worker who reads current journals. However, the collection of these data into book form makes a more satisfactory

source of information than do scattered papers and will, no doubt, be of interest to many new readers.

Many tedious experimental details in the perfection of the test are naturally included, and interesting phases of the subject are hinted at but are left undeveloped. A short chapter is devoted to the effect of acid and alkali on the test, but little definite information is given. Further data on H-ion concentration as influencing the reaction, and a consideration of the underlying principles of physical chemistry would add to the theoretical part of the book.

The chapters on the clinical application of the test are disappointingly brief. It is to be regretted that the author does not include more detailed tables showing comparative results obtained with the Kahn and the Wassermann tests, correlated with clinical histories. A computation of comparative data from the various laboratory workers who have used the reaction would be more interesting than the mention of these papers in the bibliography.

The book is worth-while only as offering a compact source of information regarding the development and perfected technique of the Kahn precipitation test.

We wish that the publishers could adopt less sensational methods of advertising a scientific book. M. P. RAVENEL.

Smallpox and Vaccination—*By Benjamin White, Ph.D. Cambridge, Massachusetts: Harvard University Press,* 1924. Pp. 90. Price, $1.00.

In view of the growing laxity regarding vaccination, the assaults of the "antis" and the increasing virulence of smallpox, this little book, which is No. 13 of the Harvard Health Talk Series, is particularly timely. It gives a fair history of smallpox and a good history of vaccination, demonstrating by official reports the value of vaccination in preventing smallpox. It is written for laymen, but the health officer and physician will find it useful in furnishing material for bulletins and for public health talks. We trust that it will have a wide circulation. M. P. R.

Milk Secretion—*By John W. Gowen, Ph.D., Biologist, Maine Agricultural Experiment Station. Baltimore: Williams & Wilkins,* 1924. Pp. 356 Price, $4.50.

The author has made a timely contribution to public health through his research upon the hereditary influences which determine the quality and quantity of the milk yield. Heretofore, public health workers have centered their attention upon the improvement of the quality of milk. Much remains to be done in this field; yet if milk use is to be increased, the increase must come, as the author states, from the elimination of the poor milk yielding cow and her replacement by the better bred animal. Here, then, we have a problem in public health which requires the coöperation of dairymen, farm advisers, milk inspectors, and all other public health workers, if there is to be an adequate solution.

The subject matter includes the hereditary influences of milk and butterfat yield as well as chapters on the influence of age, mode of secretion, and the permanence of milk yield and butter fat percentage. Each chapter is also briefly summarized.

While the material is presented in a somewhat technical manner, the facts contained are recommended for study. Only through such study can those who are interested in improving the quantity and quality of milk supplies hope for success. NATHAN SINAI.

The Biological Foundations of Society—*By Arthur Dandy. New York: D. Appleton & Co.,* 1924. x+197 pp. Price, $2.50.

This admirable little book is based in large part upon the author's widely used general work—"Outlines of Evolutionary Biology," which has run through several editions. The recent untimely death of the author is a great loss not only to biological science but especially to the public interested in this field. Few men have been more successful in interpreting biological science to the non-specialist than he. His moderation and lucidity of presentation lend persuasiveness and force to his writings. The present book has strong social leanings. Witness the warning in the matter of admixtures due to civilization. Conditions created by modern life tend strongly to the gradual establishment of one vast mongrel population. The humanitarian but wholly unscientific doctrine that all men are equal carried to its logical conclusion leads to a general and permanent deterioration of mankind. The closing chapter is an appeal for education; for the creation, inculcation and preservation of ideals; for the wise use of eugenic methods in limitation of the unfit; and discourages birth control in favor of dispersal and emigration. C. A. KOFOID.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

New Jersey—Many of the problems and activities of the Department of Health of New Jersey are set forth in the 47th annual report for the year ending June 30, 1924. Attention is called to the important sanitary problem created by the increasing number of summer camps, particularly those for boys and girls, and the need for effectual camp inspection to prevent outbreaks of communicable disease. The marked increase in the number of outbreaks of smallpox that have occurred during the past year is also noted, with a plea for more general practice of vaccination.

A typhoid fever death rate equal to the lowest previously recorded (2.9 per 100,000 population) is reported for the year. In this connection it is noted that an increased number of feces and urine specimens for the presence of typhoid bacilli were received in the laboratory from various sources, including dairies producing certified milk. The owners of these dairies submit such specimens, including blood, for typhoid examination, as well as nose and throat cultures for diphtheria bacilli from each person engaged in milk work and from new employes before they are allowed to handle the product.

In view of frequent references to the need for concerted efforts for rabies prevention, it is also well to observe that consideration is given in the report to the "alarming situation that exists in this state." Of a total of 276 animals' heads examined, 125 specimens were found to be positive. A number of local health officials have secured the passage of ordinances in their municipalities requiring the inoculation of all dogs against rabies.

It is gratifying to note the lowest infant mortality rate recorded: 71.9 in 1923 as compared with 155 in 1910. The demonstration of the complete continuous child hygiene program, with later assumption of the nurses' salary by the municipality, has been continued through the year with very satisfactory results. On July 1, 1924, more than 75 per cent of the nurses supervised by the Bureau of Child Hygiene were maintained by the municipality in which they are teaching this continuous child hygiene work. It is stated that the midwives are actively coöperating and refer expectant mothers to prenatal clinics, physicians and supervisors.

The Bureau of Venereal Disease Control reports important research investigations in the treatment of syphilis and of gonorrhea in women, with extension of public clinics to 26 located in the more important cities. In the small towns remote from such clinics, practicing physicians (49 in all) have agreed to treat cases referred by state or local agencies. Case finding activities have been stimulated and an active educational program has been developed.

The report of the Bureau of Vital Statistics, with detailed tables, occupies two-thirds of the space given to the report. A birth rate of 22.1 per 1,000 population is only slightly lower than that of 22.5 recorded the previous year. A slight increase over the two previous years appears in the crude death rate for 1923, amounting to 12.2 per 100,000 population. While the average infant mortality rate was 71.9 in 1923, for the colored races the rate was 123.9 per 1,000 births as compared with that for the whites of 69.2. The maternal mortality rate still remains, here as elsewhere, higher than it should be, 5.4 in 1923. Charts are presented to show the gradually declining tuberculosis mortality rate and the steadily increasing death rate from cancer. A recent study of cancer affection by ages at death showed a slight decrease in deaths of persons less than 50 years old, with a decided increase above sixty. A study of 483 resident pedestrian deaths due to automobile accidents during the year showed that 43 per cent were children under fifteen years of age.

Springfield, Mass.—The forty-third annual report of the health department of Springfield, Mass., gives an account of the organization, expenditures and activities of the health department during 1924, as well as classified tables of vital statistics extending over a long period of years. The city was credited with 155,549 people while a birth rate of 24.9, a crude death rate of 10.8, and an infant mortality rate of 67.5 were recorded.

The per capita expenditure by the health department was 93 cents, and of this amount 43 cents per capita were for the maintenance of the health department hospital, and 21 cents per capita, for school health supervision. There were 330 patients admitted to the health department hospital during the year, who remained

17,436 days, or an average of 111.2 days for tuberculosis, 15.6 days for diphtheria (40 per cent of the total cases hospitalized) and 33.6 days for scarlet fever (20 per cent of the total cases hospitalized).

The report has been carefully prepared, is well printed, and has several interesting sections dealing with the various health problems in Springfield.

Dayton, Ohio—Dayton's seventh annual report of the health department for 1924 is published in the health bulletin. From the health summary for the year, it is learned that a general death rate of 10.8 per 1,000 population is lower than has previously been recorded, while the infant mortality rate of 72.1 per 1,000 live births is the second lowest in the history of the city. An anti-diphtheria campaign has been conducted in the schools and several thousand children have been Schick tested, while those not immune were referred to family physicians for immunization. An extensive survey to determine Dayton's health needs, conducted by local health officials, has been completed.

A photograph of members of the nursing staff of the Division of Health and the Visiting Nurse Association appears above an interesting chart showing the reduction of Dayton's infant mortality rate from 124 in 1913 to 72.1 in 1924. It is noteworthy that nursing in this city is performed on the generalized district plan, all supervision being carried out for both the health department and the Visiting Nurse Association by the same supervisor, with offices furnished by the health department.

Three Rivers, Quebec—An interesting report of 24 pages for the year 1924 has been rendered by the Bureau of Health of Three Rivers, a community of 27,500 people. The total expenditure for health service amounted to 62 cents per capita.

Classified statistical data extending over a period of years are given, the causes of infant mortality (149 per 1,000 births) being analyzed in considerable detail. As in many other localities, deaths due to gastroenteritis have declined materially, but deaths associated with prenatal factors have remained fairly constant.

There were 1,020 births during the year while 263 infants under one year of age were registered at baby welfare stations. Of the 158 deaths of children from 0-1 year of age, only 9 occurred among those registered at clinics while 149 occurred among those not under this supervision. Seventy-two per cent of the milk supply is pasteurized, while 74 per cent of the herds have been tuberculin-tested.

Topeka, Kans.—Topeka's health department report for 1924 is published as a 14-page bulletin which pictures the outstanding features of the year's work. An ingenious clock dial on the cover tells the reader at a glance the number of various kinds of health services performed in the community each 24 hours, as 11 calls, on the average, made by the communicable disease nurses, over 6 cows tuberculin-tested, over 17 laboratory examinations, and 21 sanitary inspections made.

The estimated population is given as 53,595, the crude death rate 13.7, and the birth rate 23.8, with an infant mortality rate of 68.0. Effective graphs are used to illustrate the growth of health work and to indicate the trends of mortality from various causes, showing, for example, a fairly gradual decline in the tuberculosis death rate since 1912 from 125.9 deaths per 100,000 population to 50.3 in 1924. A photograph of the attractive birth certificate issued to the first baby born in Topeka in 1924 is a feature, in connection with a message concerning the certificate and its value to the baby in later life.

Detroit's Smallpox Experience in 1924—The outstanding experiences of Detroit during the smallpox epidemic in 1924 are revealed in an interesting and instructive manner in the April–May, 1925, city health bulletin. During the year, there were 1,610 cases of smallpox, with 163 deaths, indicating an outbreak of unusual severity. No one with a successful vaccination of less than five years' duration contracted the disease.

It is believed by the authors that there were two distinct outbreaks of smallpox during the winter of 1924. The first outbreak, which lasted approximately from November to April, was of a comparatively mild character, and was confined largely to the floating population, especially to both white and colored persons who had recently arrived from the southern states. By April 13, the second outbreak was well under way, and from that time until August 31 there occurred 784 cases, with 139 deaths.

In February, on account of unusual prevalence of mild smallpox and its general distribution in the city, an order was served upon the Board of Education by the Board of Health

requesting that all children refusing vaccination should be excluded from school for a period of 21 days. When hemorrhagic smallpox became prevalent, therefore, the school children had generally been protected.

The vaccination procedure in districts where smallpox became unduly prevalent is described as follows: "It has been our custom to canvass the residential districts in which there have been a large number of cases and offer free vaccination. Such practice was a rule throughout the winter of 1923 and 1924. A physician and a uniformed police officer worked together as a unit. A number of such groups would start out each evening about 6 o'clock and work until 10 o'clock. They would explain at each household their mission and emphasize the unusual prevalence of the disease in that section of the city, and the possibility that the health department might have to place under quarantine a large area in case the citizens did not voluntarily comply with our request for vaccination. In very few instances did we meet with opposition. Hundreds were vaccinated every night in this fashion, and many others reported to their family physician for such professional service. The physician and policeman make a splendid pair. The former quite naturally does the vaccinating while the latter adds dignity to the occasion, and in the more congested areas adds the official tone which precipitates the ultimate decision of the individual that possibly it would be best for him to be vaccinated." During April and May there was an even more intensive vaccination drive and special stations were established throughout the city. Industrial concerns coöperated. "Sixty thousand people casually walked into the corridor of the City Hall and were vaccinated." Within four weeks the incidence of smallpox was below the normal expectancy for that time of the year.

Sixty per cent of the cases occurred among males, three-quarters of them among white people, and one-quarter among colored who represent less than one-tenth the population. The greatest number of cases for both sexes occurred between the ages 20 and 30, only 28 of the 1,610 cases occurring among school children. In all but two cases the parents of these children had refused to have them vaccinated, while these two had missed vaccination for other reasons. "There is but one conclusion to draw from our dreadful experience and that is to compel vaccination."

Members of the Association who are interested in studying the various features of the epidemic may obtain a free copy of this bulletin direct from the American Public Health Association, 370 Seventh Ave., New York City.

BOOKS RECEIVED DURING JULY, 1925

TRAINING THE TODDLER. By Elizabeth Cleveland. Philadelphia: Lippincott, 1925. 172 pp. Price, $2.00.

HEALTH AND SAFETY IN THE NEW CURRICULUM. A Teacher's Training Book. By E. George Payne, Ph.D., and Louis C. Schroeder, M.D. New York: American Viewpoint Society, Inc., 1925. 318 pp. Price, $2.00.

HEALTH CONFESSIONS OF BUSINESS WOMEN. By Business Women. Toronto: Division of Industrial Hygiene, Provincial Board of Health of Antario. 1923. 265 pp. Obtained on application to the Division of Industrial Hygiene.

HEALTH MAINTENANCE IN INDUSTRY. By J. D. Hackett. Chicago: A. W. Shaw Co., 1925. 488 pp. Price, $5.00.

THE VITAL CAPACITY OF THE LUNGS. By J. A. Myers, M.D. Baltimore: Williams & Wilkins, 1925. 140 pp. Price, $3.25.

THE EARTH SPEAKS TO BRYAN. By Henry Fairfield Osborn. New York: Scribner, 1925. 91 pp. Price, $1.00.

TRANSACTIONS OF THE SECOND ANNUAL MEETING, American Child Health Association, Kansas City, Mo., October 14–16, 1924. Published by American Child Health Association, New York City, 1925. 408 pp. Price, $3.00.

THE AUTHOR'S BOOK. Being Notes for the Guidance of Authors in Dealing with Publishers. New York: Macmillan, 1925. 73 pp. Price, $0.50.

FIVE YEARS OF SOCIAL-MEDICAL ACTIVITIES IN THE KINGDOM OF SERBES, CROATS AND SLOVENES. Institute of Social Medicine, 1920–1925.

HOW TO LIVE. 18th Edition. Completely Revised. By Fisher & Fisk. New York: Funk & Wagnalls, 1925. 513 pp. Price, $2.00.

THE CHILDREN'S BUREAU. Its History, Activities and Organization. Service Monographs of the United States Government No. 21. Institute for Government Research. Baltimore: Johns Hopkins Press, 1925. 83 pp. Price, $1.00.

PERSONAL AND COMMUNITY HEALTH. By Prof. C. E. Turner. St. Louis: Mosby, 1925. 426 pp. Price $2.50.

HOW OUR BODIES ARE MADE. By R. M. Wilson, M.B., Ch.B. London: Henry Frowde & Hodder & Stoughton (New York: Oxford University Press), 1925. 246 pp. Price, $1.75.

SELECTED PUBLIC HEALTH BIBLIOGRAPHY

ARMSTRONG, CHARLES. Tetanus in the United States Following the Use of Bunion Pads as a Vaccination Dressing. *Pub. Health Rep.*, 40:1351 (June 26), 1925.
Report of 11 cases of post-vaccination tetanus. In 25 per cent of 200 pads of the same makes as those used on these cases, tetanus organisms were found. All of the 11 cases were vaccinated by the scarification method.

BREWER, S. W. Essentials in Directing Newspaper Publicity. *Mod. Hosp.*, 24:528 (June), 1925.
Cardinal principles in public health publicity are: know your subject; say it at a time when your audience is in a receptive mood; use language that can be readily understood; and be brief.

BRYANT, FREDERICK. Cancer and the Sun. *Boston M. & S. J.*, 192:1203 (June 18), 1925.
Brief comparison between modern and primitive living in cancer prevention. Argument presented that the sun is an aid in preventing and curing the disease.

CITY OF WASHINGTON BUILDS NINE-MILE AQUEDUCT. *Eng. News-Rec.*, 95:88 (July 16), 1925.
Description of new rapid sand filter plant, covered reservoirs and high service pipe lines in the national capital's new water supply system.

DURRETT, J. J., and STROMQUIST, W. G. Preventing Violent Death. *Survey*, 54:435 (July 15), 1925.
Analysis of deaths from street accidents, suicide and murder in four large southern cities. Health departments should study violence which results in personal injury or death and try to coördinate all preventive measures to lessen its incidence.

EGDAHL, ANFIN. Food and Disease. *Mil. Surgeon*, 57:75 (July), 1925.
Contributions to the present knowledge of the relationship to disease found to be correct when practically applied. Simplicity in diet is compatible with a satisfactory diet.

EMMONS, ARTHUR B. Health Supervision in Mercantile Life. *Labor and Industry* (Pa.), 12:8 (June), 1925.
Summary of findings and results of the Harvard Mercantile Health Work studies.

FERRY, N. S., and FISHER, L. W. Production of Immunity with a Soluble Antigen of the Pneumococcus. *J. Lab. & Clin. Med.*, 10:817 (July), 1925.
Report of experiments carried on and methods used to determine the immunizing properties of bacterial antigens prepared after various methods.

GAGE, E. H. Studies of Impounded Waters in Relation to Malaria. *Pub. Health Rep.*, 40:1356 (June 26), 1925.
Physical conditions, history of malaria and field observations of different types of ponds in the piedmont region of North Carolina and the precautions taken or which should have been taken in order to minimize malaria transmission.

GIBSON, J. E. Animal Disease Control Work and its Relation to Public Health. *Kentucky M. J.*, 23:359 (July), 1925.
Discussion of the rôle the veterinarian plays in the prevention of animal diseases that affect the public health.

GRAHAM, R. H. Dochez Scarlet Fever Antitoxin in Thirty-One Cases. *Jour. A. M. A.*, 85:95 (July 11), 1925.
Serum disease occurred in twenty-one cases, the size of the dose apparently not influencing the reaction.

GRUBBS, S. B., and HOLSENDORF, B. E. The Rat-Proofing of Vessels. *Pub. Health Rep.*, 40:1507 (July 17), 1925.
General specifications covering the principal requirements for permanent rat-proofing construction of ships and a guide for rat-proofing of ships already constructed. Accompanied by diagrams.

GULLAN, A. GORDON. A Clinical Study of Encephalitis Lethargica. *Brit. M. J.*, 3364:1120 (June 20), 1925.
Study of symptoms, clinical types, diagnosis, treatment and prognosis based on 62 cases.

GUTTERIDGE, A. GORDON. Memorandum regarding The Utilization of Sea Water as the Transporting Medium in a Sewerage Installation. *J. Roy. San. Inst.*, 46:42 (July), 1925.
Discussion of sea water's action on pipes, transporting power, action on the sewage solids and action during the process of sewage treatment. Opinion given that seawater may be safely used in the sewerage system under certain conditions.

HADFIELD, J. A. The Development of Character in the Pre-School Child. *National Health* (London), 18:6 (July), 1925.
Brief discussion of attitude and character formation, early mental life and essential principles of management.

HARRISON, L. E. A New Bacteriologic Stain. *J. Lab. & Clin. Med.*, 10:866 (July), 1925.
A fuchsin stain for staining tubercle bacilli, organisms of Vincent's angina, gram-positive bacteria, diphtheroids and spore forms.

HAVENS, LEON C. The Development and Results of a State-Wide Laboratory Service. *South. M. J.*, 18:521 (July), 1925.
In a large rural state the branch laboratory system is simple, efficient and economical, and is the method of choice for extending laboratory facilities.

HAWLEY, JOHN B. Accident to Imhoff Tank Unit at Fort Worth, Texas. *Eng. News-Rec.*, 95:54 (July 9), 1925.
Breaks in sloping bottoms of settling compartment attributed to gas pressure in vents, with possible water hammer. Author suggests that "scum in gas vents should be removed and disposed of before it accumulates in such quantity and density as to seal the vents."

HENRICI, ARTHUR T. On Cytomorphosis in Bacteria. *Science*, 61:644 (June 26), 1925.
"Cells of bacteria undergo a regular metamorphosis during the growth of a culture similar to the metamorphosis exhibited by the cells of a multicellular organism during its development, each species presenting three types of cells, a young form, an adult form and a senescent form."

HOMER, SIR WILLIAM H. The Relationships of Diphtheria and Scarlet Fever. *Med. Off.*, 33:289 (June 27), 1925.

Study of scarlet fever and diphtheria mortality in New York and London for the years 1859–1924. Discussion of the lack of uniformity in nomenclature and the influences affecting the figures in urban as compared with rural areas in England and Wales.

HOWARD, JOHN R. The Hospital and Community Health. *Mod. Hosp.*, 24:540 (June), 1925.

Discussion of services the hospital can extend in constructive health building and preventing disease. Close coöperation and permanent association with the health and social agencies essential.

KEHOE, ROBERT A. Tetra-Ethyl Lead Poisoning. Clinical Analysis of a Series of Non-Fatal Cases. *Jour. A. M. A.*, 85:108 (July 11), 1925.

Discussion of modes of entrance, symptoms, objective signs, clinical types, diagnosis, treatment and therapeutic results.

M'GONIGLE, G. C. M. Rickets and Tonsils and Adenoids. *Med. Off.*, 34:5 (July 4), 1925.

As a result of a detailed investigation into the incidence of rickets in elementary school children, the conclusion is drawn that there appears to be "some close connection between the presence of rickets and the development of enlargement of the tonsils and adenoids."

MYERS, CHARLES S. Industrial Fatigue. *Lancet*, 208:905 (May 2), 1925.

Nature and physiology of fatigue and tests used in the past. Industrial fatigue can best be measured by its direct effects, which can only be safely studied by recourse to the actual industrial work curve.

NEWSHOLM, SIR ARTHUR. Some Anomalies of Local Public Health Administration. *Lancet*, 208:1279 (June 20), 1925.

A review of the present system of administration in England, indicating some of the long overdue reforms in administrative machinery that are necessary to meet the present problems.

PERKINS, J. F. The Use of Acidified Cow's Milk in the Artificial Feeding of Infants. *Texas State J. M.*, 21:185 (July), 1925.

Nutritional requirements of the infant and features peculiar to the physiology of digestion. Suggestions regarding the method of preparing acidified cow's milk and results obtained.

RAVENEL, MAZYCK P., and DULANEY, ANNA DEAN. The Essential Unity of the Wassermann and Precipitation Tests. *South. M. J.*, 18:491 (July), 1925.

"Results indicate that there is an essential unity in the Wassermann and Kahn precipitation tests, that the underlying phenomena are identical and that quantitative and physical conditions are responsible for the apparently different reactions."

RITCHIE, JOHN. Place of Non-Official Agencies in Health Work. *Boston M. & S. J.*, 193:166 (July 23), 1925.

Voluntary agencies have their important field in the trying-out of promising experiments. Some examples.

ROGERS, SIR LEONARD. Relationship Between Pneumonia Incidence and Climate in India. *Lancet*, 208:1173 (June 6), 1925.

Discussion of the incidence, seasonal distribution, climatological conditions influencing the distribution, with an explanation of the recorded data.

SAVAGE, WILLIAM G. The Milk Supply and Its Improvement. I. Essentials of the Present Position. *Lancet*, 208:1146 (May 30), 1925; II. Inadequacy of the Present Legal Powers Dealing with Milk. *Ibid.*, 208:1199 (June 6), 1925; III. Remedies to Improve the Milk Supply. *Ibid.*, 208:1313 (June 20), 1925. *Ibid.*, 208:1360 (June 27), 1925.

Discussion of milk contamination, pasteurization, grading, and the position of the producer. A review of present statutory powers and their inadequacy. Remedies proposed include additional legislation, systematic education of the consumer, and a continuance of the present system of grading with the addition of a grade designed to repress the minority of producers who put out dirty milk.

SAVAGE, WILLIAM G., and WHITE, P. BRUCE. Food Poisoning—A Study of 100 Recent Outbreaks. *Med. Res. Coun.* (London), Special Report Series, No. 92, 1925.

Description of the results of the bacteriological and epidemiological investigations, clinical features, special types of food poisoning and paths of infection. Tabular lists of the outbreaks with their essential features.

SAYERS, R. R., and YANT, W. P. Dangers of and Treatment for Carbon Monoxide Poisoning. *Mil. Surgeon*, 57:64 (July), 1925.

Discussion of properties, detection, chemical and physiological actions of carbon monoxide, together with the symptoms, diagnosis, sequelae and treatment.

SEHAM, MAX. The Tired Child. *Pub. Health Nurse*, 17:286 (June), 1925.

Chronic or cumulative fatigue is a pathologic condition characterized by abnormal signs and symptoms, and irrational living contributes more to the production of chronic fatigue than any other single factor.

SEVEREIDE, A. L. Focal Infection. *Journal-Lancet*, 45:338 (July 15), 1925.

Removal of focal infections yields satisfactory results in many cases, and a high percentage of cures is attainable under proper conditions.

WAKEMAN, B. R. Hornell Breast Feeding Demonstration. *New York State J. M.*, 25:831 (July), 1925.

Interesting account of a six-months activity, 127 babies being registered for the demonstration.

WEGMANN, EDWARD. New Formula for Flow of Water in Clean Cast-Iron Pipes. *Eng. News-Rec.*, 95:100 (July 16), 1925.

Deduced from all available discharge records by weighting according to probable errors and general accuracy. Results in close agreement with experiments.

WHITE, BENJAMIN. Vaccination Against Smallpox—Its Technic and Interpretation. *Boston M. & S. J.*, 193:210 (July 30), 1925.

Excellent discussion of care and use of vaccine virus, the site of vaccination, method, reactions and contraindications. Special attention to desirable age periods at which to vaccinate and the necessity of securing a successful result.

WYARD, S. Cancer of the Breast—An Attempt to Estimate the Duration of Life After Operation. *Lancet*, 208:1179 (June 6), 1925.

In 465 cases studied the actual average duration of life after operation was 4.6 years which is greater by two years than that of unoperated cases from onset to death. Age of patient does not influence prognosis as regards ultimate survival after operation.

PUBLIC HEALTH NOTES

Recent Discoveries in Cancer—Information given to the public by cable from England to the effect that the cause of cancer has been found in an ultramicroscopic germ should lead no one to suppose that the methods of dealing with this disease hitherto developed by the scientific world are about to be superseded.

What has been discovered in England is apparently the causative agent of a particular kind of tumor in certain animals. This is a long way from furnishing ground for the opinion that cancer in human beings is due to the same or a similar parasite, or, in fact, to any microörganism whatever. Still more remote is the possibility that the discovery will lead to the preparation of a specific cure for the disease called cancer.

The best security which is afforded to-day against cancer lies in the earliest possible recognition of the disease and the prompt employment of skilful surgeons and radiologists. —George A. Soper, Ph.D., Managing Director, American Society for the Control of Cancer.

Unique Dietary Needs for Lactation—Evidence that natural foods contain a substance or substances essential for lactation is presented as follows: Female rats on a diet of purified casein 18, starch 54, lard 15, and salts 4 per cent, together with butter as a source of vitamin A and yeast of vitamin B, showed fertility in the first litter, followed by sterility which could be prevented or cured by the administration of small amounts of vitamin X as in the form of from 1 to 6 gm. of wheat germ daily.

Among the materials favoring lactation are fresh green (but not dried) leaves, wheat embryo (in considerable amounts), egg yolk, and meat. On extracting the egg yolk and wheat embryo with fat solvents the fat free residue is also effective, thus indicating that the substance influencing lactation does not belong to the class of fat-soluble vitamins. It is suggested that the substance may belong to the class of specific stimulants such as bios.—H. M. Evans, *Science*, New York, 60, 1540:20–22, 1924.

The Nation's Health—With the August issue, Professor C.-E. A. Winslow retires as editor of *The Nation's Health*, and is succeeded by Dr. Frank L. Rector, former secretary of the Conference Board of Physicians in Industry and medical investigator for the National Industrial Conference Board, New York. Dr. Rector will be located in Chicago, and all of his time will be devoted to the work. Mrs. Susa P. Moore, who has served this publication so ably since its establishment, has been named managing editor.

South Carolina Has Effective System of Disease Reporting—Dr. James A. Hayne, State Health Officer of South Carolina, has instituted a new system of disease reporting by physicians. Each week a card is mailed to physicians for the report of the number of cases of diphtheria, gonorrhea, syphilis, malaria, smallpox, tuberculosis, and certain other diseases. The greater effectiveness of this system of reporting is shown by the fact that in the first month of its operation 734 cases of syphilis were reported as against an average of 245 cases for each of the preceding ten months. There is a still higher rate of increase in the number of reported cases of gonorrhea. Over seven times as many cases of this disease were reported under the new system as were reported formerly.

Scopes Scholarship Fund—The scientists who were ready to testify in behalf of Mr. Scopes, recently convicted under the law of Tennessee, are sponsoring the raising of a scholarship fund which will enable Mr. Scopes to continue his scientific training as soon as possible.

At present, Mr. Scopes is without a teaching position. Although he has been offered numerous lucrative lecture and stage engagements which would net him many thousands of dollars, he has refused them, wishing to avoid even the appearance of self-exploitation. Impressed with Mr. Scopes' intellectual qualities and modesty, and believing that he is entitled to some substantial recognition for the trying

experiences that he has undergone in the service of science, and of liberty of thought and speech generally, the scientists who were associated with the defense have organized a committee to raise a scholarship fund of $5,000 to enable Mr. Scopes to undertake graduate work at an institution of higher learning of his own choosing during the next few years. Dr. Maynard M. Metcalf of Oberlin College and Johns Hopkins University, the first scientist to testify in Mr. Scopes' behalf, has consented to act as chairman of the scholarship fund committee.

It is hoped that a sufficiently large portion of the fund can be raised within a short time so that Mr. Scopes may make his plans to enter upon his graduate work this fall.

National Health Service—The U. S. Public Health Service calls attention to the fact that the "National Health Service" has no connection with the federal government and that it does not have the endorsement of the Public Health Service. An announcement of the National Health Service states that it has secured the services of Dr. Leonard Keene Hirschberg. The *Journal of the American Medical Association* points out that this gentleman has been connected with enterprises not approved by the A. M. A. and that Dr. Hirschberg was sentenced to 4 years in the Atlanta Penitentiary in May, 1923, for using the mails to defraud. How it happens that he is now at large and again active no one seems able to explain.

Children Prematurely Born—In a study of children born prematurely, Dr. Elizabeth M. McVail found that no survival was recorded of children born at six months, 12 out of 23 died who were born at the seventh month, and 9 out of 40 born at the eighth month.

Although the infant mortality of the seventh month babies was more than twice that of the eighth month babies, among 56 children examined at school, some born at seven months and some at eight months, no appreciable difference in physique was noted. Physical measurements were taken in all cases. Dr. McVail therefore concludes that premature children require greater care in both early and late infancy, but if they survive to school age there is no very great deviation from the normal in regard either to risk of death or to general physique. Of premature children in the elementary schools, 58.3 per cent were below normal weight, 13.9 per cent at normal weight for age, and 27.8 per cent above normal weight. In 72.2 per cent the weight is proportionately less than the height, 8.3 per cent have height and weight normally proportionate, and in 19.5 per cent the weight was proportionately greater than the height.—*Med. Of.*, June 27, 1925.

Pennsylvania Meeting—The fifth annual Camp of Instruction of the Pennsylvania State Department of Health was held at Mont Alto June 22 to June 24. The attendance numbered two hundred.

The guests were housed in regulation Army tents, and meals were served in the main dining rooms of the staff house of the Mont Alto Tuberculosis Sanatorium. Speakers on the program included Surgeon General Hugh S. Cumming, Dr. Victor Heiser and Dr. J. A. Ferrell, of the International Health Board; Dr. Wilmer Krusen, Director of Health, City of Philadelphia; Dr. Fones, of New Haven, Connecticut; Dr. Donald Armstrong, Dr. S. J. Crumbine, Mr. Homer N. Calver, General Edward Martin, Dr. Ellen C. Potter, Dr. J. C. Vaux, and many others. In many respects this year's camp was the most outstanding one in the history of these meetings.

On the second day a meeting of the Pennsylvania Public Health Association was held. This association, composed of public health workers of the state, has applied for affiliation with the American Public Health Association. Its officers are: President, Dr. Charles H. Miner; Vice President, Dr. Wilmer Krusen; Vice President, Dr. C. J. Vaux; Secretary and Treasurer, Dr. William C. Miller; Assistant Secretary and Treasurer, Dr. J. M. J. Raunick. Executive Committee: Mr. R. H. Lansburgh, Dr. B. K. Wilbur, Dr. H. C. Frontz, Dr. W. C. Davidson, Miss Alice O'Halloran.

LABORATORY

C. C. YOUNG *

A Rapid Method for the Filtration of Culture Media—This method is especially applicable in the making of nutrient bouillon, nutrient gelatin and nutrient agar. A wire strainer of approximately 5½ inches in diameter can be purchased in a hardware store. (See illustration.) The handle of the strainer

is removed. The half sphere of wire mesh fits well in a 6-inch glass funnel. A layer of absorbent cotton, ½-inch in thickness is placed in the strainer. The filtering surface is approximately 32 square inches. An Erlenmeyer flask is calibrated with a wax pencil or label to one or more liters and is placed below the funnel.

Nutrient bouillon is prepared and the reaction adjusted in the usual manner. After boiling, the nutrient bouillon is poured rapidly through the cotton filter. If the filtrate is not clear it is again poured through the same filter. The particles filtered out aid in the subsequent filtrations. The cotton, however, must never be squeezed. In practice the bouillon is filtered three times. Distilled water is then poured through the filter to make up loss, until the liquid in the flask reaches the calibration mark.

In making nutrient agar or gelatin, the agar or gelatin is added to the filtered nutrient bouillon. After solution by heat is effected, and the reaction is adjusted (in the case of gelatin), the media is filtered and the loss made up in the same manner as has been described for the nutrient bouillon.

The media filtered in this way is extremely clear. The filtration is very rapid. In one case, to filter three liters of nutrient bouillon, it took 60 seconds for the first filtration, and 45 seconds for the second and third filtration. The bouillon was made into agar. To filter the three liters of agar, it took 85 seconds for the first filtration, and 75 seconds for the second and third filtrations.—T. J. Murray, Rutgers University, New Brunswick, N. J.

Rapid Filtration of Agar and Gelatin—After the publication in these columns of the method of agar filtration used in the Michigan Department of Health, AMERICAN JOURNAL OF PUBLIC HEALTH, 14:1077, 1924, our attention was called to a paper by W. L. Holman, *J. Infect. Dis.*, 10:129, 1912, describing a filtration method which is essentially the same. Dr. Holman used and modified the idea involved in a method described by Bisserie in the Ann. de l'Inst. Pasteur, 21:235, 1907. P. L. K.

Diphtheria Antitoxin in the Blood of Normal Horses—The value of natural diphtheria antitoxin in the blood of normal horses which are to be used for the production of antitoxin is discussed by this authority. He states: "As is well known, many horses never subjected to artificial immunization have diphtheria antitoxin in their blood. Thus, while 0.01 c.c. of an ordinary brew of strong diph-

* Each month we desire to publish in the LABORATORY NOTES short, original articles, under the author's name, dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of the associate editor before the fifteenth of each month.—C. C. YOUNG, Dept. of Health, Lansing, Mich.

theria toxin would seriously affect or even kill many normal horses, others contain so much normal antitoxin that 10 c.c. of the same toxin would not harm them. Horses possessing natural antitoxin in their blood produce antitoxin rapidly; those with no normal immunity do not respond rapidly to immunization. The source of natural immunity possessed by some horses has never been satisfactorily explained, but of 1,350 horses tested on admission during 17 years, about half contained 0.1 unit or more antitoxin per c.c. The percentage of horses possessing normal immunity has greatly decreased in recent years. Horses possessing normal immunity showed considerable fluctuation of antitoxin titer while under observation though no injection of diphtheria toxin had been given. The source of the stimulus was not found." Glenny, *J. Path. & Bacteriol.*, 28:241 (Apr.), 1925. L. W. G.

Anatoxin Reactions with Diphtheroids—The authors secured a poor anatoxin reaction with diphtheroid filtrates or suspensions. They examined 158 non-diphtheria anginas or measles of which 68 gave positive anatoxin reaction, 90 negative. Of the 68 positives, diphtheroids were found in 61 on pharyngeal exudate, only in 21 of the 90 negatives. They conclude that the diphtheroids may cause some trouble and be followed by a negative Schick test.—Zoeller and Manoussakiss, *Compt. rend. Soc. de biol.*, 92:1290 (May 15), 1925. M. S. M.

The Association of Bacillus Bronchisepticus and Bacterium Lepisepticum with Rabbit Snuffles—In a series of 21 rabbits, 18 of which exhibited clinical evidences of snuffles, nares, sinuses and trachea, all exhibited Bacillus bronchisepticus, often in pure culture. Five of these animals showed Bacterium lepisepticum in scant numbers. Cultures from an isolated colony of rabbits, 18 of which had clinical snuffles, showed Bacillus bronchisepticus in all but one case. From this neither Bacillus bronchisepticus nor Bacterium lepisepticum could be isolated. Bacterium lepisepticum was not found.—Bull and McKee, *Am. J. Hyg.*, 5:530 (July), 1925. W. W. R.

The Titration of Diphtheria Toxin by the Flocculation Method—According to Glenny, Pope and Waddington, the strength of a toxin determined by the flocculation method is of more value to the immunologist than the various animal determinations. For general routine purposes a graduated series of quantities of antitoxin is added to a series of tubes of uniform bases containing 1.0 c.c. of toxin to be examined. These are shaken and incubated at 50° C. and examined at suitable intervals until a fine precipitate appears in one tube. This precipitate rapidly becomes more pronounced and flocculates. The rate at which a mixture of toxin and antitoxin flocculates is the essential feature of the Ramon test. Flocculation appears when toxin and antitoxin are mixed in different proportions but under any given conditions the rate of flocculation depends upon the relative proportion of toxin and antitoxin and a balanced mixture will precipitate before all others. The antitoxins against which the toxins are titrated must be standardized by flocculation methods. Standard sera should be chosen according to the type of tests to be made. The time of flocculation of mixtures can be delayed and the accuracy of titration increased by dilution or by lowering the temperature of incubation.—Glenny and Wallace, *J. Path. & Bacteriol.*, 28:317 (Apr.), 1925. H. C. H.

Simple Quantitative Test for Albumin in Urine—"A simple and rapid quantitative test for albumin in urine has been described. Every contingency which is known to arise in the examination of urine for albumin is met by the method, which requires no more time or manipulation for its performance than do the qualitative clinical tests in common use. The specific and quantitative features of the new test impart an accuracy and uniformity to albumin determinations which make them clinically valuable to a degree hitherto impossible."—Exton, *J. Lab. & Clin. Med.*, 10:722 (June), 1925. Author's conclusions.

Hemophilia: A Study of the Blood, the Clinical Course and the Heredity in Three Cases—A series of hemophiliac cases was traced in a family for eight generations, two of the sixth and one of the seventh are given in detail. Masse's law that the female transmits and the male contracts the disease was very clearly observed, in fact, 83.3 per cent of the females capable of transmitting disease were known to do so and among those capable of contracting it, 51.8 per cent of the males were proven bleeders. A case of sporadic hemophilia in females was also observed and recorded to show the difference in the clinical picture. It was found that the coagulation

and prothrombin time in all cases of hemophilia was increased two to twenty-five times and that though the quantity of platelets did not decrease the coagulation time did. Bleeding time, capillary resistance, nature of clot when formed, amount of blood calcium and number of blood platelets were the same as in normal individuals. The conclusions were that though the cause in increase of coagulation time and prothrombin were not understood, they were worthy of notice and that it was apparent that coagulation time of platelets was greatly increased. Blood transfusion is recommended as the most effective treatment and as a prophylactic measure preceding surgical cases.—Davidson and McQuarrie, *Bull. Johns Hopkins Hosp.*, 36, No. 5:343 (May), 1925. K. T.

Pneumococcolytic Activity of Bile—A bacterial cholecystitis was produced in rabbits by the direct injection of a *Streptococcus mitis*, *Staphylococcus aureus* and *B. coli communior* into the gall bladder. Bile from these animals, excepting the *B. coli* animals, lost their pneumococcolytic activity. In the *B. coli* animals the activity is somewhat delayed. All of 24 human bile specimens were found to be pneumococcolytic. Suspensions of the above organisms in bile of normal rabbits did not remove the pneumococcolytic activity, nor did cultures of these organisms in 10 per cent bile medium.—Harkins, *J. Lab. & Clin. Med.*, 10:716 (June), 1925. M. S. M.

Chloride Metabolism and Lobar Pneumonia—"The blood chemical analyses of a series of patients with lobar pneumonia are reported. The blood chlorides are low, the nonprotein and urea nitrogen are high; there is no acidosis. The changes observed are probably due to a generalized protein destruction. Supplying the missing chloride seemed to influence markedly the course of the disease. . . ."—Haden, *J. Lab. & Clin. Med.*, 10:337 (Feb.), 1925.

Physicochemical Aspects of Hemolysis—"The red blood cells may be cut without the subsequent discharge of hemoglobin. Hemoglobin may be made to combine with vehicles other than stroma; such combinations with kaolin is most effective over a definite zone of H-ion concentration. The fragility of the stroma hemoglobin combination varies greatly with the H-ion concentration, the union being most stable in the zone of pH 7.3–8.0. Charts are presented to show a definite salt protection against acid and alkali hemolysis. Serum protection against hemolysis by sodium oleate parallels the increase of surface tension produced by adding the serum. The stroma hemoglobin union is of a physicochemical nature and has the characteristics of adsorption phenomena."—Mason and Rockwood, *J. Lab. & Clin. Med.*, 10:10 (Oct.), 1924.

Pneumonia in Mice—"The reaction of mice to inspired bacteria varies according to the kind of organism inspired. Mortality and actual infection bear a direct relationship to the length of time the inspired bacteria persist in the lungs following inhalation. Hemolytic streptococci and *B. friedlaenderi* which have reached the lungs of normal mice following inhalation persist for several days. A fatal septicemia with or without pulmonary localization is frequent, and death may not occur for several days following exposure. Pneumococci on the other hand, rapidly disappear from the lungs of normal mice following inhalation and rarely cause a septicemia. In alcoholized mice, however, the pneumococci persist in the lungs for a longer period, a fatal septicemia is frequent, and pulmonary localization of the infection only occurs in partially immunized animals. Death occurs early, generally within 5 days."—Stillman and Branch, *J. Exper. Med.*, 41:623 (May), 1925.

Experimental Pneumonia by Inhalation—Non-immune mice which are alcoholized and die of septicemia following exposure to a spray of virulent pneumococci rarely show any localization of infection in the lungs. Mice which have been partially immunized by previous inhalations of living or killed pneumococci and which while alcoholized are exposed to an atmosphere of virulent pneumococci often develop a pneumococcus lobar pneumonia. Mice which have been rendered relatively immune to one type of pneumococcus may frequently develop lobar pneumonia after inhalation of pneumococci of another type.—Stillman and Branch, *J. Exper. Med.*, 40:733 (Dec.), 1924. Author's conclusions. M. S. M.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Automobile Fatalities, 1924—The Department of Commerce announces that the returns show that during the year 1924 there were in 58 of the principal cities 5,030 deaths caused by automobiles and other motor vehicles (excluding motorcycles) as contrasted with 4,908 for the same cities in 1923, 4,326 in 1922, 3,936 in 1921 and 3,602 in 1920. The corresponding death rates per 100,000 population were respectively 19, 18.8, 16.9, 15.7 and 14.6.

In 1924 New York City had the largest number of deaths (1,001), but the corresponding death rate (16.6) in this city is exceeded by the rates of 45 of the 60 cities showing rates for 1924. The highest 1924 rate is 34.8 for Paterson, N. J., and the lowest 9.8 for New Bedford, Mass. Of the 60 cities for which rates for 1924 and 1923 are available the automobile death rate increased in 1924 as compared to 1923 in 33.—Department of Commerce, Washington, D. C., *Automobile Fatalities*, 1924.

Vital Statistics, Canada, 1924—The birth rate of the Vital Statistics Registration Area of the Dominion of Canada (Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia) has been falling steadily since 1920. The rate was 26.6 in 1920, 26.4 in 1921, 25.1 in 1922, 23.7 in 1923 and 23.1 in 1924. There were 35 stillbirths per 1,000 confinements in 1924, about the average reported in the three preceding years. The infant mortality rate for 1924 is very satisfactory, being 79 as compared with 88.1 in 1923 and 86.8 in 1922. Every province within the Registration Area contributed to this betterment of the rate. The maternal mortality was 6 per 1,000 live births, which is the highest figure reported since 1921.

The death rate in 1924 was 9.8 per 1,000, the lowest death rate since 1921. The highest death rate was in the Maritime Provinces and the lowest in the Western Provinces. Saskatchewan registered the lowest crude death rate with 7 per 1,000, followed by Alberta with 7.5, Manitoba with 7.8, British Columbia with 8.6, Prince Edward Island with 10.8 and New Brunswick and Nova Scotia with more than 12. Of the total number of deaths 18.7 occurred in the first year of life. Diseases of the heart caused 10.9 per cent of all deaths; cancer 8.4 per cent; pneumonia 7.5 per cent; tuberculosis 7.0 per cent; diseases of the arteries 5.6 per cent. The proportion of deaths due to cancer is increasing, having been 7.4 per cent in 1923 and 1922 and 7.1 in 1921.

The 1924 marriage rate was 7.0 per 1,000 as compared with 7.4 in 1923, 7.3 in 1922 and 8.0 in 1921.—Department of Trade and Commerce, Dominion Bureau of Statistics, Canada.

Health of London, 1924—The resident population of London is so small (13,300 as compared with a day population of over 364,000) that the statistics fluctuate from year to year. The birth rate during 1924 was 7.1, the death rate 11.3 and the infant mortality 117.—*Lancet*, 1:948 (May 2), 1925.

Vital Statistics, Netherlands, 1924—The annual report of birth and death rates has been published for 1924. The birth rate was 24.9 per 1,000. This figure is practically the same as for the preceding years, though it shows a slight falling off. The death rate was 9.6, which is 0.3 lower than the rate for 1923. The rate for 1923, moreover, was the lowest ever recorded. A comparison of this death rate for 1923 with the rates for previous periods is very suggestive. The death rate in 1840 was 26.6; in 1880, 21.3 and in 1910, 13.5. The infant mortality rate has dropped from 56.9 in 1923 to 51.2 in 1924.—*Jour. A. M. A.*, 84:1510 (May 16), 1925.

City of Madras, 1923–1924—The 1923 birth rate in the city of Madras was 44.6 as compared with 38.8 for the previous decennium. The death rate has declined to 37.8 from 42.7 in 1922, and 46.6 for the quinquennium ending 1922. The death rate from infectious diseases was 15.5 per 1,000, from dysentery and diarrhea 7.2, while it is reported that smallpox, influenza and relapsing fever were present only

in sporadic form. Malaria is responsible for 3.9 per cent of the total deaths, a figure which has gradually increased during the last 3 years. About 2 years ago the anti-malarial staff was disbanded. The infant mortality of the city was 254.—*Lancet*, 1:891–892 (April 25), 1925.

Health Conditions in the Federated Malay States—The Federated Malay States comprise Perak, Selangor, Negri Sembilan and Pahang. The census of 1921 showed that the population was 1,324,890. Only 5,686 of this number were Europeans. The 1923 birth rate was 25.7, the death rate 24.4 and the infant mortality 180. Malaria heads the list as the most important cause of sickness and death, the death rate being 11.17 per 1,000. Attention is being focused on this problem. The campaigns against yaws and venereal diseases have been continued. Venereal clinics are being organized and considerable progress has been made in the eradication of yaws. Sixteen cases of plague, 12 of cerebrospinal meningitis, 32 of smallpox and 17 of diphtheria occurred. There was no case of cholera.—*Lancet*, 1:903 (April 25), 1925.

The Conquest of Typhoid Fever—Four decades ago a group of 24 American cities had typhoid death rates which ranged from 40 to 60 deaths per 100,000 of population annually. In recent years the rate for these cities has averaged about 3 per 100,000. In fact, in Fall River, Mass., and Hartford, Conn., there were no typhoid fever deaths in 1924, and 18 cities had typhoid death rates of less than 2.0 per 100,000 in 1924.

There were three distinct phases in the trend of the typhoid fever death rate for cities during the past 30 years. The first phase is characterized by a drop in the rate from 65.6 in 1891 to 28 in 1897. There was an average fall of 1.5 per year between 1885 and 1897. These years marked the extensive sewering operations of American cities, the elimination of privies and of backyard wells and the wide extension of municipal water supplies to homes. From 1897 to 1906 there was apparently no progress in typhoid fever control. For this period the trend was practically horizontal (+.09 per 100,000 per year). Between 1905 and 1910, however, there began another era which was characterized by the strict supervision, and later, by the filtration and disinfection of city water supplies. This soon had its effect upon the typhoid fever death rate. In 1906, the rate for these 24 cities was 34.5, and thereafter the rate declined sharply until in 1923 the low figure of 2.7 was reached. The protection of water supplies during this most recent phase of the trend of the typhoid fever death rate was supplemented by the pasteurization of milk, the supervision of the preparation of foods in public places and of food markets, supervision over shellfish and increasing use of anti-typhoid inoculation.—*Stat. Bull.*, Met. Life Ins. Co., 6:5–7 (May), 1925.

On Maternal Mortality in Canada—The maternal mortality rate for the 8 provinces which form the Canadian Registration Area and Quebec was 4.9 in 1922. Excluding Quebec the rate for the registration area was 5.5 per 1,000 births, ranging from 3.7 in Prince Edward Island to 6.9 in Alberta. It would appear probable that the maternal mortality is higher than the figures indicate, since a survey made in Ontario shows a figure higher than that given in the table by about 25 per cent. The rural maternal mortality rate for the Registration Area was 4.4 as compared with the urban rate of 6.7. The Canadian rate is fairly high when compared with the rates of other countries. Of 17 countries for which maternal mortality rates were given for recent years, 13 had lower rates than that of the Canadian Registration Area, Denmark having the lowest rate, 2.0 in 1922. Major Ross stated in 1924 that he had found it possible to have a maternal mortality rate of not more than 1 in 2,000 but Professor W. W. Chipman considers that a mortality of 2 in 1,000 is about as low as can be obtained with the best of care.

The good results of prenatal care are shown by figures quoted from the records of the Burnside maternity department of the Toronto General Hospital. The maternal mortality per 1,000 births in public wards, with no prenatal care, was 35; in semi-private wards, 8; and in public wards, supervised and with prenatal care, 4.—Helen MacMurchy, *Canad. M. A. J.*, 15:293–297 (Mar.), 1925.

Whooping Cough Mortality in 23 American Cities, 1885–1923—Between 1885 and 1923 the whooping cough death rate in 23 American cities declined at the rate of 4 per cent of the mean rate per year. Measured in terms of the rate per 100,000 lives exposed in these cities, the fall was about one-half a point per year over this period. A preliminary study of the trend of the series of death rates by

means of a 4-year moving average showed that the series followed a fairly consistent course from 1885 to 1915, but departed on the high side of its previous norm in the following years. A trend line, therefore, was fitted, based upon the record of the years 1885 to 1915 and this was then extended through the period 1916 to 1923. In these later years there was apparently a return to the marked interannual fluctuations in the death rates which were recorded prior to 1908. It is possible that during this more recent period a somewhat different trend of mortality has set in. For the period 1915 to 1923 the average death rate was 7.6 per 100,000, which was about .5 per 100,000 above the trend value for 1915. The tendency during this latest period was downward on this higher level, about .29 per 100,000 or 3.8 per cent per year. The period is too short, however, to warrant any definite statement as to the tendency for the immediate future.—*Stat. Bull.*, Met. Life Ins. Co., 6:7–8 (May), 1925.

The Influence of Heredity in the Etiology of Tuberculosis—Growth curves for 21 infants under the care of Hygiene Institution Center at Jumet, Belgium, whose father or mother was tuberculous were compared with a normal curve produced by the National Institute for Child Welfare. The weight was recorded from the first month onward, including only breast-fed children and those living in a wholesome environment, and excluding primiparous and gemelliparous infants. As control the dispersion of weight was taken for (1) an equal number of healthy children, born of healthy parents, living in healthy environments and taken at random, (2) of healthy children, born of healthy parents but living in unhealthy surroundings.

In the offspring of healthy parents, the curve of growth is parallel to the standard curve and, moreover, at about 6 months of age the majority of children are above this curve, and the mode of dispersion approaches the diagonal. In the offspring of healthy parents living in unfavorable environment, the scatter of weights is narrower, and is massed around the normal curve. While few are above this curve, a great number tend to remain below, but not much below the curve. In the offspring of tuberculous parents, the majority of weights fall below the normal, scatter spreads below this curve, few cases rise above it, and from birth to 6 months, all the weights are below the mean. Growth is irregular and slow; it departs from the normal. It seems that the organism has more difficulty in adapting itself and uses its power of growth imperfectly.

Of the 21 cases in each group, (1) of the offspring of healthy parents living in a healthy environment, 8 have contracted illnesses; (2) offspring of healthy parents living in an unhealthy environment, 9 have contracted illnesses; (3) offspring of tuberculous parents, 23 cases of illness have occurred. Some children were ill twice during the period.

It would seem that these differences in vitality are due to hereditary influences, since the mesological influences were constant. This involves the transmission of a less resistant physiological reaction and doubtless greater susceptibility to tuberculosis.—A. Govaerts, *Eugen. Rev.*, 17:12–22 (April), 1925.

Tuberculous Meningitis in Children—A study undertaken by the Children's Committee of the New York Tuberculosis Association shows that tuberculous meningitis in New York City children is nearly always caused by the human type of tubercle bacillus derived through the child's contact with persons suffering from active tuberculosis. This form of infection is most prevalent in the least sanitary and most congested districts, and tenement houses present a most formidable aspect among etiological factors. The evidence is predominantly against milk infection as a cause of tuberculous meningitis in New York City. Otitis media and acute infectious diseases, especially measles, pneumonia and whooping cough, in children in contact with active tuberculosis carry a peculiar menace. The fact that about 9 per cent of the cases studied were preceded by tonsillectomy, unassociated with any other disease, suggests that further research be done along this line. Sex is not an important factor, males being only slightly in preponderance. The highest mortality from this disease occurred in young children, the greatest number of cases in a single age period developing in children from 1 to 2 years of age. In terms of absolute numbers only, besides the American stock, there was more tuberculous meningitis among the Italians than in other racial groups. While this study verifies the accepted view of the great prevalence of tuberculous meningitis in the spring, among the Jewish and Negro races its peak was in midsummer.—B. S. Herben and M. A. Asserson, *Am. Rev. Tub.*, 11:184–199 (May), 1925.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

New Discoveries Give Impetus to Smoke Abatement—Where pure, undiluted sunlight is plentiful, the disease factor is low. Rickets, long thought to be a diet-deficiency disease, is now found to result much more directly from lack of sunlight. Public demand for smoke abatement, followed by the installation of smoke consuming devices resulted in the elimination of at least 50 per cent of the smoke of Pittsburgh. The death rate from pulmonary tuberculosis in New York City was reduced by one-half within ten years after the new sanitary regulation against smoke became operative.—American Gas Association, New York City. A. W. B.

Sinusitis and Swimming—The literature dealing with the subject of infections of the respiratory passages caused by swimming has dealt largely with only the etiologic factor of contaminated water and has almost ignored the fact that man has few structural adaptations for an aquatic environment. The author was convinced that factors other than contaminated water play a significant rôle in producing sinusitis, since the patients coming under his observation bathed in relatively pure spring water having a temperature of 71° F.

Sinus infection in man may come from foreign bacteria gaining entrance to the deeper portion of the nasal apparatus and conjoined structures. In aquatic animals, certain structures keep the water from gaining entrance to the nasal cavities where infections might be introduced or else injury done to the respiratory epithelium lining the true cavity and the parnasal sinuses. These adaptations are far superior to any means that man has for keeping water from the respiratory tract, since man is now far removed from being an aquatic animal and has not the adaptation for an aquatic environment.

Another possible causative factor of sinusitis from swimming is that of lowered resistance, normally found in the upper air passages. Warm blooded aquatic animals are highly adapted mechanically to live in cold water, being provided with heavy coats of fur or thick layers of fat. Man is not similarly adapted and if his stay in water is prolonged, the production of heat fails to keep up with the loss, and the body temperature falls. He therefore lacks in the adaptation to maintain his body temperature for more than a brief period in water temperature lower than his own.—H. Marshall Taylor, M.D., *Jour. A. M. A.*, Vol. 85:7 (July 4), 1925.

Lime Hypochlorite Lowers Psychoda Flies at Sewage Works—Studies made at Schenectady indicate that 200 p.p.m. will reduce flies 70 per cent and not upset biological action.—Morris M. Cohn, *Eng. News-Rec.*, 94:684 (Apr. 23), 1925. A. W. B.

Water Supplies and Typhoid Fever—In 1900 the average typhoid fever death rate in the United States was 31.3 per 100,000 population. During the 5-year period from 1918 to 1922 inclusive, the rate was 5.3, a reduction of 83 per cent. The number of persons supplied with purified or treated water has increased enormously during the past 20 years. This has been due, in a large measure, to the development of the application of chlorine to public water supplies. The art of water purification has advanced notably in the development and perfection of mechanical filtration. Health authorities, water works officials and the general public have learned that polluted drinking water means a high typhoid fever death rate and most of the states in the Union have passed water supply, sewerage and anti-pollution laws.—C. A. Holmquist, *Canad. Eng.*, 48:385 (Apr. 7), 1925. A. W. B.

Oiling for Mosquito Control—Sawdust from sawmills in the vicinity is saturated in a mixture of equal parts of kerosene and waste crankcase oil. The sawdust is broadcast on the water as a farmer would sow grain. It sinks to the bottom immediately and oil is released for four or five days. This method is successfully used by Newport News, Va.—*Pub. Works*, 56:81 (Mar.), 1925. A. W. B.

INDUSTRIAL HYGIENE

DRS. E. R. HAYHURST AND N. C. DYSART *

Chronic Carbon Monoxide Poisoning and Pernicious Anemia—McGurn found but one physician out of more than 60 interviewed (1917) who possessed more than a fragmentary knowledge of chronic CO poisoning. Unquestionably there are many individuals who suffer from various psychoses, neuroses, anemias, cardio-respiratory, gastro-intestinal, and urino-genital disorders due to the insidious and prolonged effect of exposure to carbon monoxide. Case reports are presented of a woman aged 62 years, her husband aged 62 years, and their English bulldog, all of whom lived on a farm in West Virginia where they owned a gas well which had supplied the house for heating and cooking purposes for the past 18 years. Mr. and Mrs. C. and the dog occupied the first floor. Gas was burned continuously day and night and they slept with the windows closed. They spent most of their time indoors during the winter. The children slept upstairs with open windows and without gas heat and remained healthful. The three victims developed typical symptoms of continuous carbon monoxide poisoning, oftentimes with rather acute exacerbations. The two people showed blood analyses typical of pernicious anemia (tables given). The man and the dog eventually died although the man was removed from the exposure for many months previously. Both the man and woman were given blood transfusions twice. Careful investigations are said to have been made to eliminate chronic malaria, hook worm, syphilis, chemical poisons, etc. The writers discuss the similarity to three cases reported as acute pernicious anemia due to carbon monoxide poisoning by August Koren, a Norwegian physician, in 1891. Abstracts are also made of the studies of Sommerfeld, Karasek, and Nasmith and Harrison, while a rather full reference list is appended. They claim they now have under their care four patients suffering from chronic carbon monoxide poisoning, all showing symptoms of anemia, three with polycythemia, and with hemoglobins ranging from 85 to 100 per cent. The combination of pallor resembling a high grade of anemia, as well as a group of symptoms suggestive of anemia in the presence of a red cell count of over 5,000,000 is emphasized as of considerable diagnostic significance, if not pathognomonic. The condition has no specific antidote. Treatment is symptomatic. The only hope of relief lies in the field of preventive medicine. The authors list the onset and later symptoms characteristic of the poisoning. (These cases were all probably severely gassed at different times during their exposures, that is, stuporous to unconscious.—E. R. H.)—Beck and Fort (Baltimore), *Ann. Clin. Med.*, III, 6:437-443 (Dec.), 1924.

Health of the Working Child—A study was made of children under 16 years of age who had not, therefore, an extensive industrial history and could not receive working papers before their fourteenth birthday. Only children who had worked for at least 6 months were included. Those assisting in home housework were excluded. An equal number of boys and girls composing 412 children was covered. It was found among other things that boys had the active jobs and girls the sedentary jobs. One-fourth of the children had wholly inadequate chairs. Five per cent handled weights exceeding 20 pounds. Nearly one-fifth worked in noisy surroundings. Heavy vibrations of machinery and rush of work exposed some to serious nervous strain. Only one child was found working on a dangerous operation, but 11 per cent had received some injury during work. Twenty-three were employed more than 48 hours (contrary to law). Over one-third had a lunch period of less than one hour. Lighting was good in the majority of places, but wholly inadequate in one-third. Two out of three worked in well ventilated plants. Visual defects were found in about one-fifth, of which only one-seventh were adequately corrected with glasses. Dental defects were found among one-third and enlarged tonsils among one-fourth. Thyroid enlarge-

* The editors of this Section will gladly receive contributions from members. Please address all communications to Hartman-Ohio Bldg., Columbus, Ohio.

ments were found in 5 per cent of the girls but not in any of the boys. Heart affections were found in 4 per cent, and some lung abnormality in 3 per cent. Overweight was more common than underweight. Puberty had not yet been obtained in 26 of the boys and 19 of the girls. Endocrine deficiency was found in 9 per cent. Only 45 per cent were considered to have normal postures; 13 per cent showed some degree of scoliosis and almost one-fourth showed indications of flat foot. Three-fourths of the children had two or more defects. (The Bulletin is freely illustrated with posture diagrams, foot tracings, tables, etc., and gives the protocols of 20 typical cases showing a relationship with "background," "physical condition," and "work requirements." The Appendix contains the inquiry form used for these three features.)—*Special Bulletin No. 134*, N. Y. State Dept. of Labor, 91 pp. (Dec.), 1924.

Cases Before the **Ohio Industrial Commission**—*Occupational Paresis.* Neuritis of the median nerve cannot be classified as an injury and when developing from the use of tools tending to create such a condition does not come under provisions of the occupational disease coverage (p. 3).

Occupational Disease Liability. An employe suffering a loss from an occupational disease has the right to bring an action against his employer for the violation of a lawful requirement (p. 4).

General tuberculosis, secondary to a crushing injury of the foot that had caused continuous disability from date of injury until death, can be regarded as compensable in reaching a decision as to the grant of a death award (p. 4).

Infection of the right leg, the result of chafing from a boot top, is not an injury arising out of or occurring in the course of employment (p. 4).—*Ind. Rel.*, Ohio, II, No. 4 (Apr.), 1925.

Lighting as a **Phase of School Hygiene**—In one Ohio city photometric readings were made of the school buildings, most of which (apparently) were of old type construction. The light was measured during cloudy weather with the blinds high and electric light burning, where installed. Illuminations ran from ½ to 10 foot candles. The former, it is admitted, is extreme, though actual. The latter, however, with a range of from ½ to 10 foot candles is typical of some 60 rooms visited. The month of February, in a 5-year analysis, was found to have 15 school days without the sun; March 11 2/3 days and April 10 1/6 days. An elementary knowledge of proper lighting standards should be possessed by those concerned in school administration and control.—H. C. Koch, *Ed. Res. Bull.*, Ohio, IV, 2:29 (Jan. 21), 1925.

The Diagnosis of Silicosis—The silicotic chest is especially characterized by (1) an impairment of the normal elasticity, (2) gradual reduction of the power of expansion, (3) in advance cases these changes may render the chest almost rigid and, in complete contrast with emphysema, almost fixed in the position of expiration, (4) practically the only specific auscultatory sign is the thin, high-pitched quality of the inspiratory murmur, (5) the coexistence of a tuberculous infection leads to a combination of these signs with those of pulmonary tuberculosis (tuberculo-silicosis) which is usually indicated by unsymmetrically disposed patches of shadow in the otherwise uniformly mottled lung areas (radiographically), (6) the specific radiographic sign of (early) simple silicosis which is a fine, uniformly distributed and symmetrical mottling of both lung areas—"I know of no other condition in which this appearance is present,"—but with a lapse of time the individual shadows become larger, less numerous and more widely separated so that differentiation from tuberculosis, syphilis, malignant disease and glanders must be thought of and other test methods applied, (7) the "vertical" or "asthenic" heart in which there is a change of the outline of the heart shadow from that of a curvilinear right-angled triangle towards that of a narrow rhomboid which, in the author's opinion, is merely an indication of cardiac atrophy which is encountered in chronic cachexias arising from any cause, and (8) prior to the appearance of the specific mottling it will be found that all of the normal shadows of the lung—those due to the hilar tissues, the bronchial and vascular "trees" and the sponge work of interlobular connective tissue—are becoming more and more pronounced, so that in Johannesburg, following the code used, the interpretations of the man's radiographs will be found to have passed from "normal" to "a little more fibrosis than usual," "more fibrosis than usual," and finally to "more fibrosis plus." Although this indication of a gradually increasing fibrosis of dendritic type appears to

be an invariable preliminary to the development of the specific mottling of silicosis, it is not in itself a pathognomonic sign of the disease, that is to say, it may be due to other causes.

"The most satisfactory radiographs of the chest in cases of suspected silicosis are taken when the plate, or preferably 'duplitized' film, is placed beneath the chest of the patient who lies upon it in the prone position; and in which the exposure requisite to produce optimum results does not exceed one and one-half seconds, and preferably one second. The thorax must, of course, be motionless during the exposure, and any radiograph in which the upper margins of the ribs appear doubled must be invariably rejected. When we can see in the radiograph a reproduction of the cancellous structure of the rib we may be satisfied that the chest has been motionless. In addition to this, we must assure ourselves that the exposure has not been of such duration, or the rays so penetrating, as to cause the shadows of the individual vertebra to appear upon the plate. The heart-shadow should be uniformly opaque, and there should be a strongly-marked contrast between this and the more transradiant parts of the lung. In this connection I may state that we have lately found it possible to produce a great improvement in 'contrast' by the simple device of doubling the strength of the developer recommended by the manufacturers of the films."

"If we adopt the criteria which I have now outlined, we may accept the evidences of the radiograph with confidence, for no lungs which are silicotic beyond the very earliest stage will fail to yield specific appearances in the negative prepared under such conditions."—W. Watkins-Pitchford, *Med. J. Australia*, Vol. 2, 15:382, 1923.

Industrial Nursing Services in Seventeen Industrial Plants—Students in the post-graduate course in public health nursing at the University of Minnesota are primarily responsible for this report. Four of the nurses chose industrial nursing for their special subject and made actual visits to the industries investigated. The report discusses the classification of the industries as public utilities, food product manufacturers, and miscellaneous, including paper factories, advertising specialties, a large department store, a shoe factory, a knitting mill, and a large machinery plant. The method followed consisted of personal interviews with managers using a questionnaire. Twenty-three nurses were also interviewed, of whom one had had a special course in public health nursing; several had had social service training and some others special experience. Few of the employers seemed to realize the value of public health training for industrial nurses. The nurses themselves realized it. The work which they performed consisted of first aid, supervision of the sanitation of the buildings in some of the establishments, health records, rest rooms, and recreation where provided, physical examinations (in eight plants) and duties outside of the plant. Physicians in three of the firms were full-time, in seven part-time, in three advisory, in two insurance, while for two insufficient information was given. Nurses usually have two weeks vacation with pay. The average salary was $133 per month, the minimum $100, and the maximum $150. The conclusion is that while it is difficult to measure the actual progress made, health standards have been raised, and the co-operation and work of the nurses have been excellent in so far as their programs permitted them to go. Outstanding needs appear to be a fuller appreciation on the part of the employer as to the health needs of his employes, of standards of qualifications for physicians and nurses engaged in industrial health work, and adequate financial support. The article is preceded by an introduction commenting upon the standards and program for such work by Mary Elderkin, Chairman, Industrial Nursing Section, N.O.P.H.N. The report was mainly prepared by Miss Sarah Nelson, one of the student nurses, who made the survey.—*Pub. Health Nurse*, Vol. 17, 6:314 (June), 1925.

FOOD AND DRUGS

HARRY W. REDFIELD, PH.D.*

Fowl Pest Again Prevalent—In the *New York Produce Review and American Creamery* issued July 29 appeared the following portentous item:

During the past week local live poultry shippers have awakened to the fact that the so-called poultry plague which threw the industry of the country into chaos last winter is with us once more. Two cars of live poultry this week showed unmistakable evidences of the disease and some of our express receivers have noticed a droopy appearance in some of their nearby receipts. In further confirmation of this we are told that the disease is breaking out quite extensively in Missouri, Kansas, certain sections of Iowa and in Indiana and that the federal government also has experts on the ground investigating reported outbreaks on farms and in feeding stations. . . . We can only urge that receivers, shippers, growers and governmental authorities make every effort to attack the problem in the beginning rather than to temporize. The sooner comprehensive measures are taken in such a crisis the better it must be for all in the end. It is, of course, too early to get any definite information as to the extent of the outbreak, but the mere fact that there has been a recurrence of the disease in such widely separated sections of the country is sufficiently alarming in itself.

ABSTRACTS

Review of the Literature for 1923 on Infant Feeding—This review of the literature of 1923 on infant feeding is classified under the following topics: Breast feeding, artificial feeding, butter flour mixtures, acidified milk, goat's milk, thick cereal feeding, metabolism studies on infant growth, antiscorbutic capacity of different food substances, and other types of food used in infant feeding. A list of 49 references to the literature is given as footnotes—R. D. Moffett, *Am. J. Dis. Child.*, 27, 6:618–632, 1924.

Observations on the Use of Insulin—This is a general discussion of the administration of insulin, with particular emphasis on the distribution of the day's supply.

In observations on the effect of varying the interval between the administration of insulin and the taking of food, a time interval of 2 hours proved in general the most satisfactory, but in recommending this a word of caution is given against beginning the treatment with such a long interval in the case of emaciated subjects. In the distribution of the day's supply, it is recommended that not more than 12 hours be allowed to elapse between the evening and morning doses whether a third dose is given or not.—D. M. Lyon, *Lancet*, II, 4:158–162, 1924.

The Nutritive Value of Proteins—In this extensive and critical review of the literature on the nutritive value of proteins, the author first discusses briefly the wastage of food protein in digestion and metabolism and the calculation of the net protein value of foods. The principal methods of investigating protein values are then subjected to a rigid critical examination.

The biological method for the analysis of a foodstuff, as formulated by McCollum and Davis, and later modified by McCollum, is criticized as being based upon a theory of nutrition that is known to be inadequate.

The method of expressing numerically the growth-promoting value of proteins devised by Osborne, Mendel et al., and modified later, is considered to determine accurately which of two proteins is better utilized in growth, but to have a comparative rather than an absolute significance.

Of the methods involving a study of the nitrogen metabolism, the author's method of determining the biological value of proteins is considered to measure fairly accurately the fraction of absorbed nitrogen used by the body for all purposes, but not to give results of absolute value, characteristic for each protein and constant under all conditions. Evidence is reviewed showing the impossibility of determining the biological value of proteins for growth alone or milk production alone and the possibility of determining the value of proteins for maintenance alone.

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With this critical discussion of methods as a background, the literature is reviewed on the nutritive value of proteins for maintenance and growth, the question as to whether the biological values of proteins differ greatly for different animals, the relation of the amino acid constitution to the biological values of proteins, the supplementary relations among proteins, the biological value of proteins for milk production, and the physiological effects of protein.

A list of 150 references to the literature is appended.—H. H. Mitchell, *Physiol. Rev.*, 4, 3:424–478, 1924.

A Comparison of the Metabolism of Some Mineral Constituents of Cow's Milk and of Breast Milk in the Same Infant—II. Chloride Metabolism—This is a report of chloride metabolism experiments conducted at the same time and on the same subjects as the calcium studies previously noted.

A change of diet from breast milk to cow's milk was invariably followed by an increase in the chloride excretion in both feces and urine, the increase being attributed, at least in part, to the increased chloride intake of cow's milk. The average values obtained with cow's milk and breast milk were as follows: Intake, 1.4817 gm. and 0.4441 gm. per day, respectively; excretion in feces, 0.1128 and 0.0576; and excretion in urine, 1.0988 and 0.3298 gm., respectively.

The absolute utilization of chlorides was 1.3691 gm. for cow's milk and 0.3847 gm. for breast milk per day, and the percentage utilization 92.2 and 87.4 per cent, respectively. The chloride retention varied to a marked extent with the different subjects. The average retention for cow's milk was 0.2710 gm. or 18.9 per cent, and for breast milk 0.0886 gm., or 19.2 per cent. With increasing age there was a decrease in the actual amount of chloride retained from cow's milk but not from breast milk. The change in milk had no appreciable effect on the chloride content of the blood, which averaged 618.1 mg. per 100 c.c. of plasma for cow's milk and 627.7 mg. for breast milk.—C. C. Wang and L. H. Davis, *Am. J. Dis. Child.*, 27, 6:569–577, 1924.

Iodine Deficiency in the Dietary Supplied by Use of Kelp—The author suggests the use of dried kelp as the dietary source of iodine in goitrous communities.

In recommending kelp in preference to inorganic salts of iodine, the author advances the opinion that "it is preferable that the body be permitted to secure its iodine from natural vegetable carrier of iodine by natural digestive process of selection and elimination through a prolonged digestive period rather than from some chemical, highly soluble and of high penetrative powers against which the natural protective and defensive agencies of the body are not able to prevail."—J. W. Turrentine, *Nation's Health*, 6, 7:449–451, 516, 1924.

Pellagra—The author reviews the various theories which have been advanced as to the etiology of pellagra, and presents arguments in favor of the hypothesis that the principal factor involved is "an inadequate supply of the antineuritic vitamin B, with the lack of the antiscorbutic vitamin C playing a contributory rôle." In his own experience 28 pellagra patients are said to have been cured in from 3 to 16 weeks by the sole treatment of the addition of tomato juice, raw cabbage, lettuce, and the water in which vegetables had been cooked to the daily diet on which pellagra had developed.—N. M. Owensby, *Med. J. & Rec.*, 120, 8:377–379, 1924.

Diet and the Public Health—This symposium, held at the 1924 meeting of the British Medical Association, consists of papers on The Importance of the Mineral Elements in the Maintenance of Health, by J. B. Orr; Common Errors of Diet in an Urban Population, by J. S. Manson; and Diet Control as an Instrument of Public Health Progress, by W. G. Savage, followed by a general discussion by H. Scurfield, R. Hutchinson et al.—*Brit. M. J.*, 3325:504–512, 1924.

Experiment Station Work on the Fat-soluble Vitamins—This is a review of investigations in progress during 1922 at the state experiment stations on the fat-soluble vitamins and their rôle in animal nutrition, with particular emphasis on their relation to the metabolism of calcium and phosphorus.—S. L. Smith, U. S. Dept. Agr., Off. Expt. Stas., Work and Expend. Agr. Expt. Stas., 1922, pp. 79–87.

Metabolism Investigations in Avitaminosis—This is a summary of an extensive series of vitamin studies conducted at the Pharmacological Institute of the Imperial University at Tokyo and hitherto reported chiefly in

Japanese literature. The investigations were similar in scope and results obtained to those conducted in Berlin by Bickel and his coworkers (Trans. title).—G. Shinoda, *Arch. f. d. ges. Physiol.*, 203, 1–4:365–393, 1924.

The Mineral **Content of Human Milk in** Normal and Rachitic **Families**—Data are reported on the content of fat, ash, calcium, and phosphoric acid samples of breast milk from 12 mothers of nonrachitic and 15 of rachitic infants in the city of Glasgow, Scotland, and from 12 healthy women in country villages. The samples in most cases were obtained by exhausting the breast artificially. The period of lactation varied from 5 days to 13 months. The average results for the three groups in the order noted above were, fat 2.24, 2.85, and 3.17 per cent; ash 0.196, 0.195, and 0.196; CaO 0.047, 0.047, and 0.042; and P_2O_5 0.04, 0.039, and 0.044 per cent. As shown by these data, there were no appreciable differences in the composition of the milk whether the infants developed rickets or not.—S. V. Telfer, *Biochem. J.*, 18, 5:809–813, 1924.

Pellagra in Relation to **Milk Supply in the** Household—Observations are reported on the influence of variation in only one item of food (milk) on the incidence of pellagra in three households in South Carolina. In all cases the removal of milk from the diet was followed in about 3½ months by the onset of pellagrous symptoms in some members of the family. With the resumption of milk the symptoms promptly disappeared. "The sensitiveness of these border-line dietaries to what would appear on the surface to be a trifling change in some one of the meagerly provided essentials is a point that cannot be overemphasized in the prevention and control of the disease."—G. A. Wheeler, *Pub. Health Rep.*, 39, 35:2197–2199, 1924.

Effect of Direct **Sunlight, Diffuse Daylight,** and Heat on **Potency of Botulinus Toxin in** Culture **Mediums and Vegetable Products,** XXIV—Studies on the destruction of botulinus toxin, types A and B, indicate that the toxin produced by the growth of Bacillus botulinus in glucose peptone veal infusion broth and in vegetables was destroyed by exposure to direct sunlight in open tubes in from 90 to 118 hours. In the absence of air and light the rate of destruction was still slower. Centrifuged toxins prepared from cultures of B. botulinus in suitable media were destroyed by heating to 80° C. for from 4 to 10 minutes, but liquor from contaminated home-canned or commercially-canned products proved more resistant.

Canned vegetables either naturally or artificially contaminated with B. botulinus were cooked over an open flame for varying periods and finally tested for toxicity by feeding the material to guinea pigs instead of using subcutaneous injections.

In commenting upon the results, the danger is emphasized of eating suspicious canned products even after they have been reheated. "The only protection against botulism remains, therefore, in the proper education of the public to use adequately processed food products, whether commercially-canned or home-canned. Visibly spoiled canned food should not be made safe by recooking. It should be destroyed by adding to the jar a fair amount of commercial lye, which is commonly used in the household. The heat generated will not only destroy the botulinus toxin, but will in conjunction with the high degree of alkalinity either destroy or materially reduce in number the potentially dangerous spores of B. botulinus present in the food."—P. Schoenholz and K. F. Meyer, *J. Infect. Dis.*, 35, 4:361–389, 1924.

Vitamin A Content of Fresh Eggs—In this contribution from the Bureau of Chemistry data are reported on the content of vitamin A in fresh eggs laid during the summer months by hens which had access to plenty of fresh green food.

The experiments were conducted on young rats, using both preventive and curative tests. In the former 0.75 gm. daily of egg proved adequate for normal growth and 0.5 gm. for growth at somewhat less than the optimal amount. In the curative experiments the rats were fed a vitamin A-free basal diet until the development of ophthalmia and were then fed the egg in different amounts. With 0.5 gm. there was prompt cure of ophthalmia and restoration of growth. With 0.25 gm., the time required for the cure of ophthalmia was somewhat longer and the rats made slightly poorer growth. With 0.1 gm., the growth recovery approximated that with 0.25 gm., but this amount proved insufficient to cure ophthalmia in some cases. The amounts of egg yolk corresponding to 0.75, 0.5, and 0.25 gm. of whole egg are calculated to be about 0.26, 0.17, and 0.088 gm., respectively. Attention is

called to the fact that the amount required for growth approximates closely the 0.25 gm., reported by Hess to be the protective dose for rickets. It is further calculated that a little more than 0.05 gm. of the oil of egg yolk would be required for promoting growth and 0.025 gm. for curing ophthalmia. This is thought to indicate that egg oil has a vitamin A potency of between 2 and 4 per cent of that of the most potent cod liver oil.—J. C. Murphy and D. B. Jones, *J. Agr. Research*, (U. S.), *29*, 5:253–257, 1924.

The Uric Acid Problem—An Experimental Study on Animals and Man, Including Gouty Subjects—In this extensive investigation of uric acid metabolism the fate of uric acid injected intravenously into various animals was determined by analyses of the blood, urine, and tissues.

The experimental findings are thought to furnish proof that the muscles of gouty subjects contain no more uric acid than those of normal subjects, and that only cartilage and connective tissues are permeable to uric acid. —O. Folin, H. Berglund, and C. Derick, *J. Biol. Chem.*, 60, 2:361–471, 1924.

Effect of the Process of Manufacture on the Germ Content of Bulk Condensed Milk—The bacterial content of milk during the various processes of condensing has been determined in studies at the University of Illinois, and the results are herein reported.

The milk used was purchased from farmers, skimmed to an approximate 2.3 per cent fat content, heated to 150° F., by live steam, and held at this temperature for 15 minutes, after which it was boiled under a vacuum pan at a temperature of 128° to 140° F., for 1.5 to 2 hours. After being concentrated from 3.5 to 1 part, it was superheated to 180° to 186° F., until properly thickened, after which it was cooled. Bacterial counts were made of the raw milk and of the processed milk after preheating, concentration, and superheating. Some of the samples were modified by skimming, by the addition of some concentrated milk, and by changes in other conditions. The equipment was carefully cleaned between batches much as would be expected under commercial operations.

The results showed that the processes through which milk goes in being condensed tend to lower the bacterial content of the finished product, the maximum, minimum and average final counts being, respectively, 36,400; 480; and 6,289 bacteria per c.c., though the initial milk had counts in some cases of over 100,000,000. High bacterial counts in condensed milk are suggested as due to contamination after manufacturing or to improper storing.—H. A. Ruehe, *New York Cornell Sta. Mem.*, 76:3–18, 1924.

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CHILD HYGIENE

TALIAFERRO CLARK

Hypoplastic or **Honeycombed Teeth**—Every school medical officer of experience has probably noted this serious dental defect, the appearance, occurrence and causes of which are discussed by Millican from a study of 5,757 children between the ages of 5 and 14 years. Of this group, 267, or 4.64 per cent, showed hypoplastic teeth, the permanent teeth being affected in all but 9 of the cases.

The defect consists usually of horizontal bands across the tooth surfaces, the enamel of which is either (1) deeply or lightly pitted with brown pits, or (2) altogether defective in quality and deficient in quantity. The incisors and the six-year-old molars are most frequently affected. It is stated that in some localities a deficiency in the calcium content of drinking water results in hypoplasia of the teeth, but in this series of cases the causes operating to produce the defect were apparently general diseases of infancy and early childhood, and malnutrition where insufficient or improper feeding resulted in rickets.

The diseases noted as probable causative factors included measles, whooping cough, bronchitis, bronchopneumonia, chronic or subchronic nasal obstruction, and malnutrition. Any disease causing this defect must occur before the child reaches the age of 3½ years when calcification is practically complete. The severity of the defect is influenced by the severity of the disease and the length of time it continues. The highest percentage of cases is found among the children of the poorer laboring classes.

Of 10,000 children inspected, only two (brother and sister) showed typical Hutchinson's teeth.

The teeth of children of tuberculous parents seemed to be remarkably free from hypoplasia, but it was felt that fuller evidence should be collected on this point.

Millican concludes that diseases of the respiratory system in infancy, and malnutrition are the chief causes of hypoplasia in teeth; and that the lack of breast-feeding is an important factor. Special precautions in respect to feeding, and the prevention and care of disease should be carried out during the first five years of the child's life.—Percy Millican, *Med. Off.*, May 2, 1925.

The Mental Examination of Dull and Backward Children—The author states it is now recognized that educational backwardness in a child is very rarely the fault of the child or of the teacher, but is, if at all marked, nearly always due to some physical or mental abnormality. A very great amount of work in this connection therefore has to be carried out by the school medical department. The causes of backwardness are considered:

(1) In children of normal intelligence:
  (a) Missed educational opportunities in earlier years from absence from school, ineffectual teaching, unfavorable home circumstances from an intellectual point of view, etc. Of these many causes, illness in earlier years is probably the commonest.
  (b) Blunting of special senses by deafness or defective sight or by chronic disease, adenoids, chorea, etc.

(2) In children of subnormal intelligence:
  (a) Severe illness in infancy.
  (b) Hereditary or congenital influence, not necessarily associated with bodily defect but very frequently found with a bad personal history (late onset of speech, walking, etc.) and a bad family history (poor scholarship in parents, lunacy, alcoholism, psychoneurosis, etc.).

All these factors are medico-psychological and therefore fall naturally under the supervision of a specially trained physician.

The diagnosis in the early stages is not always easy, and a detailed and often long-continued consideration of the cases from every point of view must be made. It is now generally recognized that at 7 years is the best age to deal with such cases.

In Nottingham at this age every child is submitted by the head teacher to three simple tests of education devised by Mr. P. B. Ballard. They are the three one-minute tests in reading, addition and subtraction. These

furnish the teacher with an index figure which is called the educational ratio (E. R.).

The names of all those falling below 90 per cent of the normal are submitted to the senior school medical officer. A member of the medical officer's staff who has had special training for the work next visits the school and examines each child, in the majority of cases by the Stanford revision tests of intelligence, and makes notes as to the opinion of the head teacher, regularity of school attendance, apparent general health, sight, hearing, etc. Suitable cases are then summoned to the clinic, for further examination by the medical officers who go thoroughly into the history of each case and into the physical condition of the child; the Stanford revision and other tests also are applied, and we have the advantage of a report from the head teacher on the progress of the child at school and so forth. The parent is required to be present. At this examination we obtain a second index figure, the intelligence quotient (I. Q.).

A decision is then made as to whether the child should remain at the ordinary school, in an ordinary class, or in one of the practical classes for dull and backward children, or whether he should be certified for a special day school. In not a few cases the open air school is found advisable, and many children are referred for further examination of the eyes or for the advice of the aural specialist.

During the period under review 346 children reported by the head teachers underwent preliminary examination.

The medical officers' decisions were as follows:

Suitable for ordinary class	87
Suitable for practical class	174
For further mental examination by M. O.	62
Consideration deferred for six months	17
Other categories	6

—By A. A. E. Newth, *Med. Off.*, July 11, 1925.

The Prevalence of Dental Disease in Great Britain—It is stated that 86 per cent of the children in the elementary schools of England and Wales suffered from bad teeth. There are between 6,000,000 and 7,000,000 of these children and less than 500 dentists to care for them. In some parts of the country 96 per cent have defective teeth, an average of 5 per child. There is an enormous and progressive increase in the consumption of sweets, cakes, biscuits, jams and marmalade—foods which adhere to the teeth and ferment rapidly. Improper feeding often begins with the baby deprived of its mother's milk. The remedies for gum and tooth disease are correct diet and a clean mouth.—London Letter, *Jour. A. M. A.*, July 18, 1925.

A Comparison of Dried, Evaporated, and Fresh Cow's Milk—In this experiment rats were fed on a diet of white bread (crumb only) mixed with (1) fresh cow's milk, (2) dried milk, or (3) evaporated, non-sweetened milk.

Throughout the study it was found that the rats fed on evaporated milk were in poorer condition than those fed on either fresh cow's milk or dried milk. It was obvious that dried milk and evaporated milk possess quite different dietetic values, and that dried milk approximates more closely to fresh cow's milk. Experiments previously reported prove that the content of vitamin B is greater in dried milk than in evaporated milk.

The dried milk used was apparently quite equal in dietetic value to fresh cow's milk; if there was any advantage it was in favor of the dried milk. The evaporated milk used, however, compared less favorably with fresh cow's milk.—Gladys Annie Hartwell, *Brit. M. J.*, June 13, 1925.

The Development and Diet of Chinese Children—The authors have reported a study of the measurements and diet of 96 Chinese boys living in the School for Poor Children in the northern part of Pekin. These boys were either orphans or "waifs from famine areas." They lived under sanitary conditions, and had been in the school from 2 to 10 years, the longer periods predominating. The older boys worked 8 hours a day in their rug factory and studied 2 hours in the evening. The younger boys had 4 hours of study during the day and 4 hours of recreation, consisting of setting-up exercises, marching, basket ball, and unorganized play.

The measurements were taken in no clothing except short coolie cloth trousers, and the growth curves of these boys were checked up by the curves of middle-class children in various summer schools in Pekin. The curves of standing and sitting height, weight, and height-weight ratio were compared with corresponding curves of American boys (Baldwin method). In each instance the Chinese curves were lower than the American.

In a study of the diet, it was found that children between 6 and 7 years of age consumed an average of about 900 calories; between 10 and 11, about 1,000 calories; and between 14 and 15, about 1,700 calories. This is decidedly lower than American standards. No milk, butter, eggs, and practically no fruit were used.

These children were happily engaged in work, study, and play, apparently thriving on this low food intake. The author states that "they seem to have cleared for action, to have trimmed themselves down to a physique suitable to the economic environment."

A surprising fact noted was that in the whole number examined only 14 dental cavities were found, and this in spite of an obvious lack of oral hygiene.—John Hammond and Hsia Sheng, *Am. J. Dis. Child.*, June, 1925.

Tuberculosis Contacts—Dr. W. Spencer Badger, S.M.O., includes in his latest annual report the following confidential circular which he sends on appropriate occasions to the head teachers of schools:

Dear Sir, or Madam,—

The above-named child attending your school is reported to be a tuberculosis "contact." This implies some increase of liability to contract the disease. Seeing that tuberculosis is most readily cured in the early stages it would be helpful if you would notify to me any signs of failing health that may become obvious to you. In this connection I may remind you of the utility of the weighing machine which is at your disposal. If you could find time to weigh tuberculosis "contacts" periodically (say once a month) any *continued* failure to gain weight would justify a report to the school medical officer who would then summon the child for special medical examination at the inspection clinic. Such reports, which would be of great help, should be headed "*Tuberculosis Contact*" and contain the full name and address of the child in question.—*Med. Off.*, July 11, 1925.

Rickets and Tonsils and Adenoids—In this study of 2,676 children in the elementary schools in Durham County, England, an effort was made to correlate the occurrence of certain common physical defects with the presence or absence of rickets.

The five cardinal signs constituting the author's standard for the determination of rickets were (1) parietal bossing, (2) frontal bossing, (3) changes in the chest wall, (4) knock knees, and (5) bow legs. Beading of the ribs and enlargement of the radial epiphyses, he states, have in many cases disappeared by the time the child is 5 years old. Harrison's sulcus and pigeon breast are the important rachitic changes in the chest wall found in school children. When two or more of the five standard signs were present the child was labeled as rachitic.

Of the 2,676 children examined, 83 per cent were found to be definitely rachitic, 11 per cent probably rachitic, and 6 per cent definitely non-rachitic. Of this group, 8.7 per cent had enlarged tonsils, 9.1 per cent were mouth breathers, and 7.3 per cent had enlarged tonsils and were mouth breathers. Enlarged tonsils are commoner in girls than in boys, but boys more than make up for this by an excess in the percentage of mouth-breathers. The two conditions are not necessarily associated.

The percentage of enlarged tonsils alone shows a slight increase in boys from 5 to 8 years of age and a rather greater decline from 8 to 12. In girls of similar ages there is a steady increase. In the case of mouth breathing there is a very considerable increase from 5 years to 8, but this increase is much more marked in the case of boys. The decrease from 8 to 12 is marked in both sexes. Where enlarged tonsils and mouth breathing are associated, there is an increase to the eighth year, and later a decline. The decline in both sexes is marked.

The correlation of these defects with rickets is shown in the following table:

	Per cent
Definitely rachitic children	
Enlarged tonsils	9.4
Mouth breathing	9.4
Enlarged tonsils and mouth breathing	8.4
Total	27.2
Probably rachitic children	
Enlarged tonsils	8.2
Mouth breathing	4.7
Enlarged tonsils and mouth breathing	2.7
Total	15.6
Non-rachitic children	
Enlarged tonsils	0.0
Mouth breathing	0.0
Enlarged tonsils and mouth breathing	0.0
	0.0

It would appear, therefore, that there is some connection between rickets and the development of enlarged tonsils and adenoids.—G. C. M. M'Gonigle, *Med. Off.*, July 4, 1925.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Consultation at St. Louis—What questions should be answered and what problems are to be tackled before the winter's work is done? Such matters can be brought up in group and individual conferences in connection with publicity headquarters at St. Louis. (Another reason why workers in publicity should be there.)

Exhibits at St. Louis—The League of Red Cross Societies has sent us a selection of posters from various countries, which supplemented by choice poster material from other countries, will be displayed on walls of the meeting rooms at St. Louis in October. Please send several specimens of the best you have done the past year—posters, leaflets, press releases, and other material. Address two or three copies to the secretary of the Section, who is also the editor of this department.

Education and Publicity at St. Louis—The once-a-year opportunity for meeting those who face the same problems and must overcome the same difficulties that you must surmount is at the annual gathering of the American Public Health Association. Education and Publicity will have two full half-day sessions and a formal luncheon. There will be present some scores of men and women who may have solved some of the problems you face. Their experience is yours for the asking. These same people will have other questions yet unsettled upon which you may throw light from your experience.

The Motives Which Bring Action—What, in our publications and other publicity material, is supposed to bring action? What do we say that will get people to follow our good advice? What are the psychological appeals we offer? These questions, based on the appeals used in public health activities *as they are found in the literature and other materials of health agencies,* will be taken up in a luncheon session at the St. Louis meeting in October.

A special invitation: National, state and local agencies, both governmental and private, are cordially invited to submit specimens for examination in this session. Leaflets, cards, posters, placards, press stories, lantern slides and other material may be addressed to Psychological Appeal Session, Evart G. Routzahn, 130 East 22d St., New York, N. Y.

Kindly underscore the lines which make an appeal to some motive for action—in changing personal habits, making use of a clinic or other service, taking a health examination, giving attention to the children of the family, supporting the health department, voting for health legislation, etc.

Please write "100" at the top of the samples of which 100 copies can be supplied for distribution to the audience.

Does our printed matter (and other material) contain sound, clear, telling, resultful appeals to positive action? This session gives every health worker an opportunity for having his own material tested. (Another reason for being at St. Louis.)

Publicity Table: Luncheon and Dinner—A table has been reserved at the Statler for luncheon and dinner for those who wish to meet educational and publicity workers and talk over such topics as the following:

Automatic Picture Machines
Health Entertainers
"Helps I want from National and State Organizations"
House Organs
How Texas Makes Its Posters and Placards
Making Use of Special Dates and Events
Money Raising by Mail
Multigraph, Mimeograph or Printing—Which?
Questionnaires
Rural Publicity
Stunts and Features
Using Photographs: Camera Clubs.

Please vote for the topics you wish—before

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

you go to St. Louis. Address secretary of the section. Attendance is limited; so be wise you reach St. Louis. (Another reason for and register promptly at "Information" when being there.)

A Campaign Publicity Manual—Publicity for Christmas Seals, the 1925 campaign book, prepared by Dwight S. Anderson of the National Tuberculosis Association staff, is the best aid yet prepared for local committees, as the editor sees it. Under Seventy-five Ways to Find News is a descriptive check list of publicity possibilities ranging from Before the Campaign Opens to After Christmas. Every item has a page number referring to a subsequent page of the book where is given further suggestions with samples of actual newspaper stories published in the 1924 campaign. The manual was prepared solely for increasing the sales of Christmas Seals, but it will be stimulating and suggestive in connection with other health projects. Doubtless a copy may be examined at any local committee headquarters. 25 cents.

Demonstration Wins Doubters—"To the layman who thinks about it, the fact that 75 per cent of school children have physical defects, comes as an incredible shock. He is pretty apt to jump to the conclusion that there is an error in the computation or that overzealous medical examiners are magnifying trivialities. . . . As a selling argument for the medical inspection of school children nothing surpasses an ocular demonstration. Medical examiners will therefore do well to invite, from time to time, the lay public to be present and observe how schools are examined. . . . They will in this way learn more in an hour about the prevalence of defects among school children than by a month of statistics and public addresses. . . ."—The Incredulous Parent, *Nation's Health*, 7:414 (June), 1925.

An Attractive City Bulletin—The most good-to-look-at city health department bulletin that reaches my desk is *Better Health*, issued by the Syracuse, N. Y., Department of Health in cooperation with the Syracuse Health Demonstration. It costs more than most bulletins; it is edited with the services of a capable publicity worker; and it has the backing of a sympathetic department staff. It appears every alternate month. An important feature is news from various local health agencies. Ask for a copy and note the paper, the illustrations, and other elements of its attractiveness.

METHODS AND MATERIALS

Health Book Covers—Tooth brush manufacturers and others desiring to reach children and parents are making use of the old fashioned stout paper covers used to protect school books. Health agencies interested in testing this medium may get further information through the office of the American Public Health Association.

"How Pictures and Words help to determine what paper to use in a Booklet." Warren Paper Co., Boston, Mass. Illus. 55 pages. Free.

Little Boy Blue Makes Up (Mother Goose characters), by Grace Farrington Gray; Health for Uncle Sam (Mr. Bad Habits, Mr. Exercise, etc.), by Mignon Quaw; The Vegetables Entertain (Mr. Tomato, Miss Carrot, Miss A Vitamin, etc.), by Mignon Quaw. *Farmer's Wife*, 55 East 10th St., St. Paul, Minn. Illustrations of costumes to be made of paper. Each 10 cents.

March In Our Line—Keep Healthy, an 8 page folder, illustrated, with restraint in the use of words. The cover appeals to children, but the text promises to be most useful when read by parents. American Child Health Association, 370 Seventh Ave., New York, N. Y. Samples free.

Ocean Safety Service, Ocean Accident and Guarantee Corporation, 114 Fifth Ave, New York, N. Y. A 63 page illustrated catalogue of safety posters and pay envelope enclosures. Free.

Staging the Convention Playlet Without a Stage, by Roland Cole. *Printers' Ink Monthly*, 185 Madison Ave., New York, N. Y. 10:35, 138–140. (March) 1925. 25 cents. Describes use of a playlet in a convention of hat dealers. Suggests a method for emphasizing the main points in a campaign manual of instructions for workers.

Suggested Scheme for Raising Nursing School Endowments, *Trained Nurse and Hospital Review*, 37 West 39th St., New York, N. Y. 74:22. (Jan.) 1925. 35 cents. Suggests consideration of possible practicability of endowment insurance taken out by graduating students.

Teaching Dramatically: The Project Method in Home Hygiene Classes, by Stella Boothe. *Trained Nurse and Hospital Review*, 37 West 39th St., New York, N. Y. 74:30–35. (Jan.) 1925. 5 illus. 35 cents. The use of demonstrations conducted by the pupils.

Sixteen Million Circulation—"What are you doing to prolong your life and stave off disease and death?" This question will be asked of 16,000,000 people through the coöperation of the publishers of the *Literary Digest* with the National Health Council. This probably means the biggest circulation by mail ever given to a single printed health message.

"The Irresponsible Sponsor"—Before we allow the use of our names on the letterhead of an organization about which we know but little, however appealing may be its purpose, it may be wise for us to ask the National Information Bureau, 215 Fourth Avenue, New York, N. Y., for copy of *News Letter No. 10*, "The Irresponsible Sponsor."

Direct Mail Convention and Exposition—Something of what business and advertising can teach health workers about the use of the mails will be revealed at the annual gathering of the Direct Mail Advertising Association in Boston, October 28–29. If you wish to go there after you return from St. Louis, write Direct Mail Advertising Association, 770 Penobscot Building, Detroit, Mich., for particulars.

Detroit "Health Extra"—All through the year the secretary of the Education and Publicity Section has been receiving requests for copies of the "Health Extra" supplied by the *Detroit News* for use in the newspaper session at Detroit. Copies have been supplied for class or institute work. A few copies remain for those who ask for them.

Japan Asks for Educational Publicity Material—"Dr. T. Asano of Japan secured his degree as Doctor of Public Health in Industrial Hygiene at Harvard and while in this country collected material on health education in industrial plants. Unfortunately, it was all destroyed during the earthquake and he is anxious to gather together as much material of this nature as possible."

Here is part of his letter to Dr. Wade Wright of the Metropolitan Life Insurance Company: "With regard to my part, I am now in conduct chiefly with 'health educational work' such as Accident and Disease Prevention for the workmen as well as their residential district, rather than laboratory working. Though, for me, this is not so long time until today, I have experienced with pretty sure that, for such teaching of health and hygiene for the non-medical people, the most effectful method is through visual instruction by poster, pamphlet, and other means of illustration with simplified words and figures.

"I have heard that many of life insurance companies in America, especially as such as Metropolitan L. Ins. Co. that you are at charge, Prudential L. Ins. Co., etc., have been doing very excellent work in this field of popular health education. I believe also, not only insurance companies, but many governmental bodies such as Board of Health of State, or many private and associative organizations have been doing so very splendidly in your country.

"Pretty many materials of this kind have been collected while I was there, but unfortunately these were in the packages that burned off last year. I should be very grateful if you would let me have any materials for this purpose, that issued from your company or from any other organizations, as far as you would be able to collect with not so trouble task to your own work. If cost and postage become relative high expense, let me know please.

"If time and your own work is allowed to collect any bulletins, leaflets and tracts, etc., with regard to teaching of health and hygiene for the public, let me have with the best pleasure, too."

Address: T. Asano, Industrial Hospital, T. Asano Shipbuilding Co., Yokohama, Japan.

Typewritten Lantern Slides—Announcement slides and displays of current statistics for use in a meeting can be made easily on the typewriter by several simple, cheap devices on the market. Pencils especially made for marking on glass may suit you better. The Executive Office of the Association can tell you where to get such things.

Child Health Education Service—This is the new name of the Modern Health Crusade Service of the National Tuberculosis Association. This follows the lead of those state tuberculosis associations which have already adopted the title "Director of Child Health Education" and have not been limiting their school programs to the Modern Health Crusade.

Taking Subscriptions at State Meetings—All who attended a recent meeting of county tuberculosis secretaries received copies of a mimeographed list of eight health and social

work periodicals, with an offer to take subscriptions while at the meeting. Ask George J. Nelbach, 105 East 22d St., New York, N. Y., for a copy of the list to see the form used. The following were listed: American Journal of Public Health, American Review of Tuberculosis, Better Times, Health Library Index, Hygeia, Journal of the Outdoor Life, Nation's Health, and The Survey.

It may be well to add one or more of the dollar a year popular magazines.

"The Rabbit Race"—"The old familiar saying that 'an apple a day keeps the doctor away' was based on the idea that the doctor never came to see anyone unless he was quite ill, and, as a rule, very ill. We used to hear it said that Mrs. Jones was so sick that she had to have the doctor, and the poor doctor, when he was called, was supposed to work miracles. Being only human, of course, he often failed.

"The way we have been employing our doctors reminds one of the rabbit races they hold down in Texas. A jack rabbit is let out of his pen and has a clear run to his hole. After he has a fairly good start, a greyhound is let loose. Of course the hound takes after that rabbit. Sometimes he catches the rabbit, but often he doesn't.

"So it is frequently with the family doctor. Disease breaks loose in some member of the family and everybody waits to give it a good start. The doctor, like the hound, is under serious handicap. Perhaps he and nature will catch up with the disease and save the patient, but on the other hand perhaps they won't.

"In one of the places where they race rabbits there are two or three old jacks who have never been caught. These wily old rabbits, as soon as they are let loose, lay back their ears and make a bee-line for their holes. No hound so far has overcome his handicap and caught them.

"We have some diseases which are in a class with those wise old rabbits. Once they get a fair start, nothing known to medical science can catch them—cancer and tuberculosis, for instance. Folks must come to realize how important it is not to put the greyhounds of medical science under a handicap if they are to cope with such treacherous diseases and save human life. Give your doctor a fair chance to help you get well by calling him early and letting him assist you and your family in keeping well. Don't give your rabbits too much of a start. Some day one of them may win the race."—Dr. Allen Craig, *Collier's Weekly*, 416 West 13th Street, New York, N. Y. 5 cents. Sketch of two greyhounds after a rabbit.

An interesting example of a popular health article which might be reprinted as a leaflet, after securing permission from *Collier's*. How could the sentence beginning "Once they get a fair start" be phrased more accurately?

Negative Tests for a Report—"The failure to reach the public is often due to the form of the reports as well as to its contents. Some of the more common defects in form may be listed:

Mechanics

1. Unattractive cover
2. Crowded page or chart
3. Poor typography
4. Small type, hard to read
5. Absence of photographs
6. Too few photographs
7. Poor cuts
8. Too few graphic charts
9. Not enough graphic charts
10. Too much undigested statistical matter
11. Poor paper, ink and binding
12. Lack of good subheads
13. Poor or no title page
14. Poor binding
15. Poor proofreading

Strategy

1. Not addressed to right audience
2. Not addressed to particular audience
3. Not taking account of local situation
4. Not definite purpose
5. Not well organized
6. Not definite in conclusions
7. Not convincing
8. Not interesting
9. Not concrete or specific

Journalism

1. Poor lead
2. Lacks human interest
3. Lacks drive
4. Poor close
5. Poor editing
6. Needs boiling down
7. Needs stories, illustrations, incidents, live matter
8. Pedantic style
9. Too much editorial matter."

The Interrelationships of Hospital and Community, by Edward A. Fitzpatrick. *Modern Hospital*, 22 Ontario St., Chicago, 2:133–144 (Feb.), 1925. 25 cents. The first prize winner in *Modern Hospital* essay contest.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

State Child Hygiene Laws—The synopsis of the child hygiene laws of the several states, including school medical inspection laws, which was published several years ago by the United States Public Health Service, has been revised as of May, 1925, and reissued as *Public Health Bulletin* No. 110. This compilation, made by Dr. Taliafero Clark and Mr. Selwyn D. Collins, contains much useful information, even though the data were gathered by the somewhat ubiquitous and none too accurate questionnaire method. The bulletin is divided into two parts, the first summarizing various child hygiene activities conducted by the states, and the second giving the information for each state in detail, with abstracts of important laws. It is pointed out by the authors that there is a very serious lack of uniformity and completeness in the laws relating to school medical inspection and physical training, as well as duplication in child hygiene work by state agencies.

School medical inspection laws are sometimes administered by state health authorities, sometimes by educational departments, sometimes by both in supposed coöperation, and occasionally by no one at all, according to this study. The extent and character of the examinations also vary from almost nothing to a complete physical examination by a school physician. There is no reason why a model state school medical inspection law could not be drafted, based, for instance, on the consensus of scientific opinion as expressed in the various health education conferences held by the American Child Health Association. Such a law should be drafted or at least carefully gone over by a competent attorney, and not, as is unfortunately too often the case in similar matters, prepared solely by a person perhaps well versed in the public health phases of the problem but totally unfamiliar with its legal aspects.

Illegitimate Infants in Baltimore—In 1916 Maryland passed a law forbidding the separation of mother and infant during the first six months of life, except under special conditions. In order to determine the effects of this law, the United States Children's Bureau, which like the Public Health Service, happens to be interested in child hygiene, made a study of the welfare of illegitimate babies. This investigation has been issued as *Bureau Publication* No. 144, and was prepared by Rena Rosenberg and A. Madorah Donahue. Part one of this report examines the mortality among infants born out of wedlock in 1915 and in 1921. The figures show a 50 per cent reduction in this death rate, although the mortality of infants of legitimate birth was reduced, or declined, only 20 per cent. The Children's Bureau believes, therefore, that the enforcement of this law has been productive of a great saving in babies' lives, which shows that laws are of some value, after all.

The effect of the law on the policies and work of social agencies was also studied and the conclusion reached from visiting 24 agencies that the law in its practical application has been of value in making more effective the work of these agencies. Sentiment was markedly in favor of it, which shows that some laws can be popular after all, too.

Federal Taxes, Physicians and Sanitarians—An excellent discussion of the physician's claims under the federal tax reduction plan appears in the *American Medical Association Bulletin* for June, 1925. This comprehensive article is by Dr. W. C. Woodward of the Association's bureau of legal medicine. It outlines reasons for reducing the tax now imposed on physicians under the Harrison Narcotic Act and also gives arguments for making deductions in income taxes for expenses incurred in attending medical conventions. The former proposition is, perhaps, of more direct interest to practicing physicians than to sanitarians, but the latter proposal is of much significance to public health workers. There is no reason why expenses incurred by members of the

American Public Health Association in attending the annual meeting or other conventions should not be deductible as traveling expenses in pursuit of "a trade or business." As Dr. Woodward points out, no exemption will be granted until the Commissioner of Internal Revenue changes his previous rulings, or the Board of Tax Appeals or the courts reverse his decisions, or Congress alters the law. This is a matter which the Association should take up and individual members can appropriately raise with the Secretary of the Treasury or the Chairman of the Committees on Ways and Means of the House, and Finance of the Senate, respectively.

Model Eye Law Proposed—A uniform model law for the examination of the eyes of school children in all states and cities is advocated in the report of the Joint Committee on Health Problems in Education of the American Medical Association and the National Education Association, according to the *Journal of the American Medical Association* for July 18, 1925 (page 218). The report says that in only 17 states is the examination of the eyes of school children compulsory, and of these, few specify the portion of the school population to be examined or the frequency of the tests.

The National Committee for the Prevention of Blindness hopes eventually to be able to make a complete survey of state laws relating to all phases of eyesight, but has not as yet been able to make such a much-needed study.

Apropos of eyesight, the *Journal of the American Medical Association* in its issue of July 25, 1925 (page 272), reports a court case, in which an optometrist has sued an optical firm for libel, due to certain advertisements put out by the latter in which persons are advised to consult an oculist, a regular M.D., if they need glasses. This case had not been decided, but was pending.

Miscellaneous Items—Distribution of the legal responsibility of local health authorities in England, Virginia, Massachusetts, North Carolina, New York, New South Wales, Victoria and New Zealand is discussed in the London *Lancet* for July 11, 1925, by Dr. G. H. L. Cumpston, medical officer of Australia, who recently visited this country.

The preparation and passage of milk ordinances, an article by Dr. Charles P. Stahr, in the *First Annual Report of the Pennsylvania Association of Dairy and Milk Inspectors* is outlined in *Public Health Engineering Abstracts* of the U. S. Public Health Service for July 4, 1925.

A monograph on the United States Children's Bureau, by the associate editor, has just been issued by the Institute for Government Research of Washington, D. C.

Public Health Reports for July 4, 1925, contains a chronological outline of federal health legislation from 1789 to date.

In case any one does not know it, Mr. Scopes was convicted of the heinous offense of teaching evolution in the State of Tennessee.

Court Decisions—A number of decisions of interest and importance to public health have recently appeared in the law reports.

In Michigan it has been held that laws protecting and promoting the public health should be liberally construed. Schulte v. Fitch, 202 N. W. 719. This is a well established rule of law and will also be found in a number of the decisions of the United States Supreme Court, as well as in those of numerous state courts.

A dead mouse in food gives sufficient cause for action against a restaurant keeper, according to Kenney v. Wang Len, 128 Atl. 343, a New Hampshire case, which is also abstracted in *Public Health Reports* for June 5, 1925. A purveyor of food, while not an insurer of his goods, is expected to exercise due care that they shall be pure and wholesome. Dead mice in food are hardly conducive to health, comfort, or aesthetic ideals.

Phosphorus poisoning has been held to be an injury under the Workmen's Compensation Act of Maryland in Victory Sparkler & Specialty Co. v. Francks, 128 Atl. 635. This decision is abstracted at some length in the *Monthly Labor Review* of the United States Department of Labor for July, 1925 (page 165).

Damages for alleged infection of tuberculosis, granted by a lower court, were reversed by the Supreme Court of North Carolina in Williams v. Williams, 125 S. E. 482. Williams had gone to plaintiff's house and two days later contracted influenza and died of it and tuberculosis. The plaintiff claimed damages for infection to his house and bedding, but the court held that defendant had been in no way negligent and that a man is liable only for injury arising from lack of exercise of that care which characterizes an ordinarily prudent man.

The Pennsylvania stream pollution case has

come in for considerable comment lately, several commentators stating it to be a landmark in the law of stream pollution. As a matter of fact, this case, Pennsylvania Railroad Company v. Sagamore Coal Co., 126 Atl. 386, decided nearly a year ago, on September 29, 1924, reaffirms an existing legal principle—that is, that it is always a nuisance to pollute a public water supply, and that such a nuisance can be enjoined. Pennsylvania has been said to have been more liberal in the past in allowing drainage of mine wastes into streams on the grounds of public policy, as this is an important business there, but this decision shows that the rights of the public are held in that commonwealth, as elsewhere, superior to the property rights of individual manufacturing and industrial interests.

CONVENTIONS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

September 5–12, Fourth International Medical Congress of Industrial Accidents and Diseases, Amsterdam, Holland.

September 8–11, New England Water Works Association, S. S. Richelieu of the Canada Steamship en route to Quebec via the Saguenay River.

September 15–17, Mississippi Valley Conference on Tuberculosis, Lansing, Mich.

September 16–18, American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, Hot Springs, Va.

September 21–25, American Dental Association, Louisville, Ky.

September 28–October 2, National Safety Council, Cleveland, Ohio.

September 28–October 3, Pacific Coast Conference of Health Officials, Long Beach, Cal.

September 28–October 3, Health Officer Sections, League of California Municipalities, Long Beach, Cal.

October 5–10, Playground and Recreation Association of America, Asheville, N. C.

October 8–10, Association of Military Surgeons of the United States, New York City.

October 12–13, Oklahoma Public Health Association, Oklahoma City, Okla.

October 12–14, International Association of Dairy and Milk Inspectors, Indianapolis, Ind.

October 12–15, American National Red Cross, St. Louis, Mo.

October 12–15, American Dietetic Association, Chicago, Ill.

October 12–16, Inter-State Graduate Assembly of America, St. Paul, Minn.

October 12–17, American Academy of Ophthalmology & Oto-Laryngology, Chicago, Ill.

October 14–16, American Association of Railway Surgeons, Chicago, Ill.

October 19–22, American Public Health Association, St. Louis, Mo.

October 19–24, American Hospital Association, Louisville, Ky.

October 20–22, American Occupational Therapy Association, Louisville, Ky.

October 26–30, American College of Surgeons, Philadelphia, Pa.

October 27–31, American Country Life Association, Richmond, Va.

November 9–12, Southern Medical Association, Dallas, Tex.

November 13–18, National Woman's Christian Temperance Union, Detroit, Mich.

November 17–19, American Civic Association, Pittsburgh, Pa.

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